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TRAUMA AND DEMENTIA PARALYTICA

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PHILADELPHIA
AND
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BOSTON

Severe injury of the head in relation to the development of dementia paralytica is of considerable medico-legal importance. This relation is constantly being discussed in courts of law and before industrial accident boards. In 1822 when Bayle first isolated dementia paralytica as an organic brain disease, trauma was mentioned as a cause. Since that time the rôle of trauma in the production of dementia paralytica runs like a red streak through the history of the disease.

The problem of the relation between head trauma and dementia paralytica may be stated as follows: Granted that dementia paralytica is a syphilitic disease of the brain, what rôle does an injury to the head play in the production of initial symptoms of the disease appearing subsequent to such injury and how long delayed may such symptoms be in order to be ascribed to the trauma? What is the rôle of trauma when symptoms of dementia paralytica appear immediately or very soon after severe head injury?

There are two views to this problem. One is the scientific medical view and the other the practical view as it affects the injured individual and industry.

Scientifically, syphilis is the sole cause of dementia paralytica. Since it cannot experimentally be proved or disproved that trauma is concerned in the production of the disease, any supposed rôle is a presumption. How valid is such presumption and what are the premises on which a conclusion is made? A post hoc conclusion is, of course, not valid. Pragmatically it appears that trauma in some cases is concerned in the production of dementia paralytica. A conclusion as to the relation between trauma and dementia paralytica can be reached only on the basis of what is logical.

In a discussion, therefore, of the relation of trauma to dementia paralytica the following considerations, which essentially are premises, become pertinent: The etiology of dementia paralytica; the onset and evolution of early dementia paralytica; circumstances which apparently alter the onset and the natural course; considerations of the rôle of trauma in determining the localization of syphilitic lesions generally in human syphilis and in rabbit syphilis; the rôle of trauma in determining the localization of disease generally. These considerations will be discussed separately.

ETIOLOGY OF DEMENTIA PARALYTICA

Following Bayle's original statement that trauma is a cause of dementia paralytica, Lasègue [1] in 1853 again emphasized it and Vallon,[2] as late as 1882, still regarded it as a cause of dementia paralytica without mentioning syphilis. It was not until about 1870, following the work of Fournier, that syphilis was seriously considered as the cause of dementia paralytica; and the rôle of syphilis was not definitely established until the present century.

Since only a small percentage of all persons infected with syphilis develop dementia paralytica, it appears that there are other factors concerned in determining the localization of *Spirochaeta pallida* in the brain of a syphilitic patient with the subsequent development of dementia paralytica. It has been appropriately said that syphilis is the necessary cause but not the sufficient cause.

Many theories have been advanced to explain the foregoing. Virchow thought that a locus minoris resistentiae, such as heredity and other predisposing causes, determined the localization of syphilis.

Edinger [3] in his "Ersatz Theorie" attributed to overuse of a part of the body a determining rôle in the localization of syphilis. Thus, a postman, by virtue of his occupation, was more likely to develop tabes, whereas a scholar was more likely to develop dementia paralytica. This hypothesis no longer calls for much consideration. Somewhat in line with Edinger's view is the celebrated dictum of Krafft-Ebing to the effect that dementia paralytica is an outcome of civilization in relation to the great demands on the nervous system incident to competitive struggle for a livelihood; the mental stress and strain; the hustle and the bustle of modern life.

More recently, through the experimental work of Levaditi, the rôle of a neurotrophic strain of *Spirochaeta pallida,* in the causation of dementia paralytica, has been considered. However, the existence of such a strain has perhaps not been conclusively demonstrated. Moreover, a clinical visualization of neurosyphilis does not lend much support to this theory.

Heredity is thought by some to be operative, as a certain brain structure or lack of protective immunity may play a rôle.

Since the febrile treatment of dementia paralytica has come into vogue, attention has been called to the possibility that various physical agents and metabolic processes may modify the evolution of syphilis. For

1. Lasègue, E. C.: De la paralysie générale progressive, Thèse d'agrégation de Paris, 1853, p. 67.
2. Vallon, Charles: La paralysie générale et le traumatisme dans leurs rapports réciproques, Thèse de Paris, 1882.
3. Edinger, Ludwig: Eine neue Theorie über die Ursachen einiger Nervenkrankheiten, insbesondere der Neuritis und Tabes, Samml. klin. Vortr., 1894, number 106 (Inn. Med., number 32, 87).

example, Mattauschek and Pilcz,[4] in 1913, showed that patients who had febrile diseases during the first year of infection with syphilis were unlikely to develop dementia paralytica, whereas the patients with dementia paralytica in their series gave no history of having had febrile diseases in the first year of infection. The experiments of Weichbrodt and Jahnel[5] and of Schamberg and Rule[6] in showing that high temperature diminishes the virility of *Spirochaeta pallida,* substantiates the observations of Mattauschek and Pilcz.

It appears from the evidence at hand that the nervous systems of patients who develop dementia paralytica are invaded from several years to thirty or more years before the appearance of clinical symptoms. Such invasions, it is thought, occur in the first few months of the infection with syphilis. Indeed, this pertains to all forms of neurosyphilis. The percentage of all patients who have serologically abnormal spinal fluid in the early stage of syphilis approximates the percentage incidence of all forms of late neurosyphilis. It is believed that in the preclinical state of dementia paralytica, which is the period of development of the pathologic process, the spinal fluid constantly presents an abnormal serologic picture.

Fig. 1.—Gummas involving the knees of a scrub-woman. The occurrence of a bilateral gumma is of particular significance since this lesion is invariably unilateral. The knee is not an area of predilection.

THE ONSET AND EVOLUTION OF EARLY DEMENTIA PARALYTICA

The onset and evolution of early dementia paralytica is generally very insidious. It is not possible in the majority of cases to state definitely when the symptomatology of the disease first appeared. A sudden onset of symptoms is unusual. In the latter event, initial symptoms usually follow circumstances which are generally conceded to be precipitating causes of dementia paralytica. Such causes are conditions in which severe mental or physical strain is involved. The following have been described: trauma, acute infectious disease, lead poisoning, sunstroke, childbirth. We have observed cases of dementia paralytica in which the foregoing were apparently precipitating causes. In one of our patients, symptoms appeared immediately after physical exhaustion. This patient worked without cessation for two days and two nights in zero weather on a dredging boat. At the end of this time he became excited and confused, presenting the first symptoms of dementia paralytica.

Cases have been described in the literature in which fright was a precipitating cause. Witkowski[7] reports the case of a woman, aged 42, who was frightened by a bursting grenade during the bombardment of Strasbourg. Following this fright, the first symptoms of dementia paralytica appeared. Gerlach's[8] patient witnessed his co-worker being run down by a steam crane. The same evening a convulsion typical of dementia paralytica appeared. Prolonged narcosis and surgical shock have also been mentioned as precipitating causes.

TRAUMA IN DETERMINING THE LOCALIZATION OF SYPHILITIC LESIONS IN HUMAN SYPHILIS

In a clinical visualization there is much evidence that trauma plays a rôle in determining the localization of a syphilitic process.[9] The surgeon is cognizant of syphilis as a factor in the nonhealing of wounds and the nonunion of fractures. The ophthalmologist observes interstitial keratitis appearing after trauma to the cornea of patients with congenital syphilis. Indeed, trauma in this regard is conspicuously mentioned by Spicer[10] and by Butler[11] in their studies of interstitial keratitis. The laryngologist is reluctant to perform a septum operation on a patient with syphilis. Trauma to the arterial wall caused by the blood stream has been mentioned as a possible factor in the causation of aneurysm.

Trauma of the skin and soft tissues of a patient in the late stage of syphilis may result in the appearance of any of the clinical forms of late syphilitic lesions. Indeed, it appears from clinical observation that syphilitic lesions may develop in areas of the skin that have been traumatized shortly before the patient is infected with syphilis. The appearance of syphilids at the site of tattoo marks may be cited. The observations of Chesney, Turner and Halley[12] furnish additional evidence. In two cases reported by them, a recently traumatized area on the skin, a burn in one patient and a keloid in the other patient, became the site of syphilids. The infection was acquired subsequent to the trauma.

An ulcerating gumma involving both knees of a scrub-woman is shown in figure 1. The occurrence of a bilateral, symmetrical gumma is of particular significance since the lesion is practically always unilateral.

Another instance of a gumma appearing after trauma is shown in figure 2. This patient, who was 64 years of age, bumped the right side of her forehead against a pipe. About four weeks later a gumma appeared at this site.

The influence of repeated and long continued trauma is shown in figure 3. The patient drove a wagon, the brake of which constantly knocked against his arm.

4. Mattauschek and Pilcz: Zweite Mitteilung über 4,134 katamnestisch verfolgte Fälle von luetischer Infektion, Ztschr. f. d. ges. Neurol. u. Psychiat. **15:** 608, 1913.

5. Weichbrodt, R., and Jahnel, P.: Einfluss hoher Körpertemperaturen auf die Spirochaeten und Krankheitserscheinung der Syphilis im Tierexperiment, Dermat. Wchnschr. **45:** 483 (May 1) 1919.

6. Schamberg, J. F., and Rule, Anna M.: Studies of the Therapeutic Effects of Fever in Experimental Rabbit Syphilis, Arch. Dermat. & Syph. **14:** 243 (Sept.) 1926.

7. Witkowski, L.: Ueber Entstehung von Geisteskrankheiten im Elsass im Zusammenhang mit den Kriegsereignissen von 1870-1871, Arch. f. Psychiat. **7:** 87, 1877.

8. Gerlach, F.: Trauma Dementia paralytica und Unfallrente, Allg. Ztschr. f. Psychiat. **67:** 145, 1910.

9. A more detailed discussion is given by Klauder, J. V.: Syphilis and Trauma, J. A. M. A. **78:** 1029 (April 8) 1922.

10. Spicer, W. T. H.: Parenchymatous Keratitis: Interstitial Keratitis; Uveitis Anterior, Brit. J. Ophth., monograph supplement 1, 1924.

11. Butler, T. H.: Influence of Trauma upon Onset of Interstitial Keratitis, Brit. J. Ophth. **6:** 413-417 (Sept.) 1922.

12. Chesney, A. M.; Turner, T. B., and Halley, C. R. L.: Studies in Experimental Syphilis: VIII. On the Localization of Syphilitic Lesions in Inflamed Areas, Bull. Johns Hopkins Hosp. **42:** 319-334 (June) 1928.

At this site a gumma appeared. The cicatricial remains of this lesion is shown in the illustration. Above this scar another gumma appeared at the site of pressure resulting from resting his arm on the frame of the wagon seat.

An extraordinary effect of trauma is shown in figures 4 and 5. This concerns a patient who had a chancre on the lip, as is shown in the upper illustration in figure 4. Antisyphilitic treatment was administered for a year. In the meantime many negative Wassermann reactions of the blood were obtained. The chancre disappeared soon after treatment, and the lip became normal.

About one year after the infection, a baby whom she was holding suddenly threw his arm up, striking the patient's lip at the site of the previous chancre. Within twenty-four hours a pronounced edema appeared, which was so peculiarly confined to the outline of the original chancre as shown in figure 5, exempting the rest of the lip, that it was regarded with considerable significance. The swelling disappeared in a few days, the lip becoming normal.

TRAUMA IN DETERMINING THE LOCALIZATION OF SYPHILITIC LESIONS EXPERIMENTALLY IN RABBIT SYPHILIS

Chesney and Kemp [13] have shown that a granulating wound in the rabbit is peculiarly susceptible to direct inoculation with *Spirochaeta pallida* and appears to be resistant to direct infection with streptococci and staphylococci.

In another study [12] these investigators produced inflammatory areas in rabbits by removing a piece of the skin. After spontaneous healing of the wounds, the animals were inoculated with *Spirochaeta pallida* intratesticularly or intravenously, either before or after the wound had completely healed. In all the rabbits thus studied a typical chancre developed in the scar of the healed wound, in which *Spirochaeta pallida* were demonstrated. The syphilitic lesion followed the direct outline of the scar. A stellate scar produced a chancre of the same pattern.

In the animals inoculated intratesticularly a chancre appeared in the scar about forty-eight days after inoculation and about the twentieth day after intravenous inoculation. None of the rabbits developed metastatic skin lesions except those which developed in the scars.

They conclude that their experiments seem to demonstrate conclusively that recently healed wounds in the rabbit constitute a favorable locus for the deposition of spirochetes following the inoculation of these micro-organisms into the testes and their entrance into the circulation.

The foregoing is the first experimental proof that trauma determines the site of a syphilitic lesion.

It is interesting to correlate the observations of Chesney, Turner and Halley with the following report of Marchand and Courtois: [14]

A woman, aged 21, in 1914 attempted suicide by firing a revolver into the right frontal region. The bullet penetrated the right cerebral hemisphere and could not be recovered at operation. In 1919 she contracted syphilis. In 1921, mental symptoms and epileptiform attacks first appeared. The patient gradually deteriorated; later she presented neurologic abnormalities and the clinical and serologic picture of dementia paralytica. She died in 1927. The bullet was found at the juncture of the frontoparietal and temporal bones of the left side, lodged in the bone, immediately under the scalp. The frontal lobes through which the bullet had traveled were considerably atrophied and adherent to the dura mater. Both gray and white substances were atrophied. Histologically, there was a meningo-encephalitis of the frontal lobes.

Marchand and Courtois attributed to the cerebral injury caused by the bullet a determining rôle in the localization of *Spirochaeta pallida,* which doubtless accounts for the unusually short period between infection and the appearance of dementia paralytica.

STATISTICAL STUDIES REGARDING THE RELATION OF TRAUMA TO DEMENTIA PARALYTICA

Kaplan,[15] in a study of 546 cases of dementia paralytica, found that in 4.4 per cent trauma was an alleged factor. Of this number he accepted trauma as playing a rôle in 2.4 per cent. In 1.5 per cent trauma exacerbated a preexisting dementia paralytica, and in 0.9 per cent the first symptoms of the disease developed after trauma.

In Lehmann's [16] analysis of 2,984 cases of dementia paralytica, a history of trauma was obtained in 145, or 4.80 per cent.

Fig. 2.—A gumma appearing at the site of trauma incident to striking the forehead against a pipe. The lesion appeared four weeks later.

Mott,[17] in studying his cases, found very few instances in which there seemed to be any reasonable relationship between an injury and the precipitation of onset or acceleration of the course of the disease. He therefore concludes that injury is not of much importance but that it may in some instances have a determining effect.

Although injuries to the head were frequent enough among soldiers engaged in the recent war, it appears from the conclusions of most observers [18] that dementia

13. Chesney, A. M., and Kemp, J. E.: Studies in Experimental Syphilis: II. The Influence of a Nonspecific Inflammatory Reaction on the Development of the Chancre, J. Exper. Med. **41**: 487 (April) 1925.

14. Marchand, L., and Courtois, A.: Craniocerebral Traumatism, Syphilitic Infection, General Paralysis Three Years Later, Bull. et mém. Soc. méd. d. hôp. de Paris **52**: 797-801 (May 24) 1928.

15. Kaplan, Leopold: Trauma und Paralyse, Allg. Ztschr. f. Psychiat. **54**: 1097, 1898.

16. Lehmann, R.: Trauma und progressive Paralyse, Monatschr. f. Psych. **26**: 4, 5, 1909.

17. Mott, F. W.: Relation of Head Injury to Nervous and Mental Disease, Brit. M. J., Sept. 30, 1911.

18. See the reports of Hahn: Dienstbeschadigung bei Paralysis, Münch. med. Wchnschr. **64**: 1015, 1917. Hauptmann: Beinflusst der Krieg den Ausbruch der Paralyse, ibid. Pilcz: Krieg und Paralyse, Wien. klin. Wchnschr. **29**: 782, 1916; Delmas: La paralysie générale et la guerre, Ann. Med.-psychol. **10**: 90, 1918. Nonne, in discussing this question, says: "This negative experience I have had myself on the ground of correspondence with observers in the field, especially Pfeifer, Goldstein, Poppelreuter and Diasecke, who have had much experience with war head injuries. They are of the opinion that such injuries played no especial rôle in the precipitation of brain syphilis. Poppelreuter writes me: It is indeed certain that the contention made in medicolegal practice in accident cases showing that there is a relationship between trauma and lues cerebri is false. In single cases it is so difficult to prove the contrary that I myself in my own cases—in dubio pro aegroto—have subscribed to payment.'"

paralytica was not increased during the war, and that in patients who developed the disease no particular rôle could be assigned to general injuries and that cranial injuries were rare in those patients. However, one should be guarded in drawing conclusions from these observations, for, as Lautier aptly remarked in a discussion of this problem before the French Medico-Psychological Society in 1918, if one were to use the figures of some of the investigators, it would prove that war was a prophylaxis for dementia paralytica.

TRAUMA AND DEMENTIA PARALYTICA

Trauma that is alleged to play a rôle in the production of symptoms of dementia paralytica is required by all writers to involve the head and to be of sufficient intensity to injure the brain, as evidenced by symptoms of brain concussion or fracture of the skull.

Patients in whom injury to the head is apparently associated with the onset of symptoms of dementia paralytica may be placed in the following groups:

Group 1. Patients in whom dementia paralytica was in full evolution at the time of the trauma. Indeed, in this group it is likely that the existing disease is the cause of the accident in which the patient is injured. Berger's [19] case may be cited as an instance. A workman, with dementia paralytica, a plasterer working on a scaffold in a tower, loosened the tie ropes. He fell with the scaffold and sustained a fractured skull. His co-worker escaped injury by climbing in a window. In the foregoing type of patient, the evidence as gathered from the history, the nature of the accident and particularly the demonstration of the signs of dementia paralytica, justify the conclusion that the disease was existing at the time of the accident. This may furnish the explanation of stupid acts and gross negligence on the part of workmen, which result in accidents.[20]

Group 2. This is probably the largest group and includes patients in whom a severe injury of the head aggravates a preexisting dementia paralytica. In these patients symptoms of the disease appear the day of the injury, the next day or within a relatively short time thereafter. Since it is not logical to assume that the pathologic picture of dementia paralytica can develop in a few weeks, the conclusion is justified that it existed before the injury. The evidence is usually to the effect that the patient was working steadily up to the time of the injury and did not present symptoms of dementia paralytica before the accident. Therefore, the conclusion seems justified that the dementia paralytica was asymptomatic. At all events, the patient was able to work.

The status of the health of the patient with reference to the symptoms of dementia paralytica before and after the injury is usually striking. The exacerbation of dementia paralytica becomes apparent and distinguishes it from the gradual deterioration that is usual in the natural course of the disease. The following record of a case serves as an illustration:

A man, aged 36, was working daily and as far as could be determined presented none of the symptoms of dementia paralytica prior to an injury in December. At this time an iron tray fell on his head which rendered him unconscious for about four hours. Since then until he came under our observation, the following April, he has not been able to work. In the interval he complained of dizzy spells and pain in his head and he felt "all in." He had difficulty in sleeping and his wife noticed that at times he was confused and talked strangely. Finally his speech became impaired. As a result of wandering away from home in his underclothes he was admitted to the Boston Psychopathic Hospital. At this time he was disoriented, confused, incoherent, euphoric and otherwise presented a typical picture of dementia paralytica.

Fig. 3.—This patient drove a wagon, the brake of which constantly knocked against his arm, at which site a gumma appeared. The cicatricial remains are shown. Above this scar another gumma appeared at the site of pressure resulting from resting his arm on the frame of the wagon seat.

Most writers admit that severe injury to the head aggravates a preexisting dementia paralytica. It is believed by some that in these circumstances the dementia paralytica pursues a rapid course. For example, Ribierre [21] states that cases in which the disease reveals itself some days or some weeks after the traumatism and runs a rapid course permit one to affirm that the condition existed before the trauma and that the latter played an indisputable aggravating rôle.

Berger [19] says that symptoms of dementia paralytica should appear directly after the trauma, the next day or the next week, and cites the following case:

A workman, aged 37, with dementia paralytica, fell out of bed and hit the back of his head. He was not unconscious but was not in a condition to work. He complained of severe headache which remained the following day. The following night he experienced severe attacks of the convulsions typical of dementia paralytica and from the time of the fall was incapable of working.

There are many instances of the type of patient here discussed reported in medicolegal annals and in medical

19. Berger, Hans: Trauma und Psychose, Berlin, Julius Springer, 1915, p. 114.

20. The workman with dementia paralytica engaged in a hazardous or responsible position jeopardizes his own life, that of his fellow workmen and others. His menace in industry and to society need not be emphasized. From data compiled by Pollock and Nolan (State Hospital Quarterly, May, 1923) they give 304.7 as the rate per hundred thousand of dementia paralytica among captains, masters and pilots in the state of New York; 350.6 for telegraphers; 275 for railroad conductors; 238.7 for locomotive engineers; 202.7 for switchmen, towermen and flagmen, and 186.0 for brakemen and trainmen. Lansburgh (Labor and Industry **13**: 3-7, 1926, Commonwealth of Pennsylvania, Department Labor and Industry, writing on the worker's responsibility in prevention of accidents, comments on the humorous incident of the man who saws off the limb of a tree on which he is sitting and points out that in Pennsylvania, in 1925, one workman actually did saw himself off the limb of a tree. Another man working on the Delaware River bridge sawed the support on which he was sitting loose from its fastenings and fell 135 feet into the Delaware River. A third was dismantling a boiler. In taking down the drums, he stood on a steam pipe connection that held them up and sawed off this connection and fell with the whole mass of material 15 feet and was killed. Again, Garner (South. M. J. **19**: 222, 1926) records the following: An autopsy performed upon one man, who lost his life in an accident, disclosed a severe syphilitic brain lesion. While it cannot be said positively yet it is probable that his physical condition was responsible for his failure to recognize signals in time to prevent the accident which cost him his life. The workmen's compensation act abolished the defense of contributory negligence; hence there is no defense for the employer to show that preexisting disease brought about accident. In this regard the injury resulting from the patient with dementia paralytica cited by Berger would be compensable, likewise injury arising from similar acts of the person with dementia paralytica, for example, such a patient who saws off the support on which he is sitting, or an injury arising from an epileptiform seizure.

21. Ribierre, Paul: Traumatisme et paralysie générale, Ann. d'hyg. **7**: 481-508, 1907.

literature. Space allows only mention of those reported by Jourdan,[22] Crouzon,[23] and Regis and Verger.[24]

Group 3. This group includes patients who at the time of receiving a severe injury to the head were free from any mental symptoms suggesting dementia paralytica, but in whom, after a period, the limit of which cannot be fixed precisely but will later be discussed, initial symptoms of the disease appeared.

This circumstance is what most French writers call "paralysie générale traumatique" and which has aroused considerable controversy. Such controversy concerns the rôle that trauma plays in the causation of dementia paralytica and what period should elapse between the trauma and the symptoms of the disease in order to associate the one with the other.

Regis and Verger, who have exhaustively studied the relation of trauma to dementia paralytica and whose opinion is most frequently quoted, champion the view that severe cranial trauma plays an etiologic rôle, acts as a determining factor and provokes the development of the disease in a syphilitic patient who is predisposed; that head trauma plays the same rôle as other factors, toxic or infectious. They formulate the following reservations: that at the time of the injury the patient was in his habitual state of mental health and had not previously presented either cerebral symptoms or modification of intelligence or character; that the interval (intercalary period) between the shock of the injury and the first characteristic symptoms of dementia paralytica has been neither too short nor too long; that the injury and characteristic symptoms of dementia paralytica are related to each other by a series of post-traumatic symptoms, which are usually intense headache, vertigo, character changes and, exceptionally, epileptiform seizures. Regis and Verger [24] place considerable significance on these cephalic symptoms in the intercalary period, as furnishing a logical connection between the trauma and the subsequently appearing dementia paralytica.

Of the writers who have subscribed to the etiologic rôle of trauma in the causation of dementia paralytica and have made similar conclusions to that of Regis and Verger may be mentioned Dupré,[25] Meyer,[26] Joffroy,[27] Ribierre,[21] Froissart,[28] Koelpin,[29] Gieseler,[30] Frisco,[31] Mott,[32] Berger [19] and Benon.[33] Brissaud [34] and Briand [35] notably have opposed the opinion of Regis and Verger.

THE RÔLE OF TRAUMA

There are two possibilities as to the rôle trauma plays in causation of dementia paralytica in the type of patient classified in group 3. The cranial injury activated a pathologic process of dementia paralytica in the preclinical stage, or such injury created or inaugurated such pathologic process.

In a discussion of these possibilities it would be desirable to know what objective neurologic symptoms the patient presented, as well as the serologic picture of the spinal fluid before cranial injury. No one has reported such observations.

The pathologic picture of dementia paralytica is that of a chronic process and probably precedes for a long time the appearance of subjective symptoms. Indeed, Southard and Solomon [36] have described as "paresis sine paresi" this period in the evolution of the disease. It is not known how long or how short a period is required for the pathologic picture of dementia paralytica, as it is known from autopsy studies, to develop.

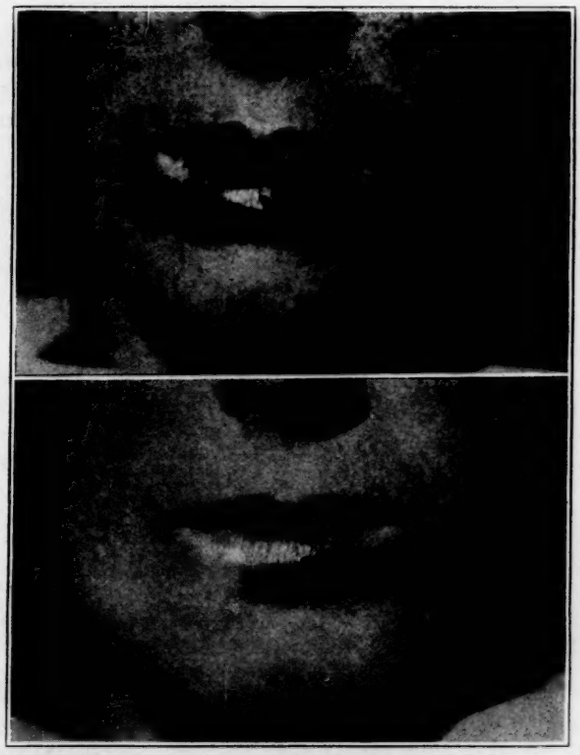

Fig. 4.—Above, chancre before treatment; below, normal lip after treatment (for contrast with figure 5).

Symptoms of the disease may appear, although exceptional, as early as a few years after infection,[37] or as late as thirty years or more. The usual period is from ten to fifteen years. It is not known whether all patients with the pathologic picture of dementia paralytica always eventuate into clinical dementia paralytica presenting symptoms characteristic of the disease. In all probability the latter stage always ensues if life continues long enough.

There is no pathologic criterion of what is necessary to produce symptoms. Studies have definitely demonstrated that the brain showing relatively little pathologic involvement may be associated with symptoms of years' duration, whereas the brain with considerable pathologic involvement may be associated with rela-

22. Jourdan, E.: Sur certaines formes de paralysie générale traumatique, J. de neurol. et de psychiat. **16**: 130-134, 1911.
23. Crouzon, O.: Paralysie générale et traumatisme, Ann. de méd. **17**: 484-487 (May) 1925.
24. Regis, E., and Verger, H.: La paralysie générale traumatique, medecine légale et accidents du travail, Paris, J. B. Ballière, 1913.
25. Dupré, Ernest: Article on "Paralysie générale" in Traité de pathologie mentale de Gilbert Ballet, Paris, O. Doin, 1903, p. 1038.
26. Meyer, E.: Trauma und progressive Paralyse, Deutsche med. Wchnschr. **31**: 1329-1330, 1905.
27. Joffroy, A.: Traumatismes craniens et troubles mentaux, Encéphale **1**: 113, 1907.
28. Froissart, Paul: La paralysie générale traumatique, Thèse de Paris, 1907.
29. Koelpin, O.: Trauma und progressive Paralyse, Allg. Ztschr. f. Psychiat. **63**: 738, 1906.
30. Gieseler, C.: Paralysie générale et traumatisme, Arch. f. Psychiat. **40**: 966, 1905.
31. Frisco, B.: Paralysie générale consécutive aux traumatisme de la tête, Ann. d. clin. d. mal. ment. e nerv. d. r. Univ. di Palermo **3**: 41, 1909.
32. Mott, F. W.: Syphilis of the Nervous System, a System of Syphilis, London **4**: 241, 1914.
33. Benon, R.: Paralyse générale et traumatisme, Rev. neurol. **28**: 810-820, 1914,1915.
34. Brissaud: XVI congrès des aliénistes et neurologistes de langue française, Lille, 1906, Informateur des alién. **1**: 169, 1906.
35. Briand: Discussion of Brissaud's paper (footnote 34).
36. Southard, E. E., and Solomon, H. C.: Latent Neurosyphilis and the Question of General Paralysis sine Paresi, Boston M. & S. J. **174**: 8-15, 1915.
37. The report of L. Marchand and G. Petit (Paralysie générale apparue deux ans après l'infection syphilitique, Bull. Soc. clin. de méd. ment., 1927) contains a review of the reports of similar cases.

tively few symptoms of short duration. In other words, it is not possible to draw definite conclusions from a study of the brain as to the duration or severity of symptoms. Granting that a patient presenting the pathologic picture of dementia paralytica, but without subjective symptoms, receives a severe cranial injury which causes petechial hemorrhages, disorder of circulation and change in pressure relations, it becomes logical to assume that these alterations may lower the resistance of the brain to *Spirochaeta pallida* and change the existing equilibrium so that pathologic processes are activated and symptoms of the disease ensue. Indeed, the foregoing is in line with the ideas of du Jardin as expressed in his paper "Hyperpexic Action of the Nervous System in Cases of Syphilitic Meningo-Encephalitis."

Moreover, in a clinicopathologic visualization of many infectious as well as other diseases, there is a period in their pathologic evolution which may be designated as below the symptom level. An interplay of various conditions—psychic, metabolic, fatigue and others—suffices to step up conditions to this level and lead to symptoms. Trauma is apparently such an agent, leading to overt symptoms.

Considering the rôle of trauma as already reviewed in determining the localization of syphilitic pathologic

Fig. 5.—The same patient as shown in figure 4: Antisyphilitic treatment was administered in the course of a year. The Wassermann reaction became negative. A baby's arm struck the lower lip of the patient. Within twenty-four hours, well pronounced edema appeared and was confined to the original site of the chancre, as shown.

lesions in general and particularly as experimentally demonstrated in rabbit syphilis, it is not unreasonable that severe cranial injury may play a determining rôle in the localization of *Spirochaeta pallida* and inaugurating the pathologic process that leads to dementia paralytica. Of these two hypotheses the former appears the more logical, that is, that the pathologic picture of dementia paralytica existed prior to injury, or at least there existed some syphilitic pathologic involvement of the brain. Indeed, in a clinical visualization, trauma aggravates or determines the localization of other infectious diseases. Tuberculosis is an example; trauma aggravates pulmonary tuberculosis already manifested, or may activate latent asymptomatic pulmonary tuberculosis. Trauma applied to the testes or joints may cause localization of tuberculosis in these parts in a person previously healthy but who harbors tubercle bacilli in his system.

THE INTERCALARY PERIOD

The limits of the time elapsing between the trauma and the onset of dementia paralytica which would logically incriminate trauma as playing an etiologic rôle is variably stated by different writers. Symptoms of dementia paralytica appearing within one month of cranial injury are generally admitted as evidence that the disease was already existent at the time of the trauma.

Regis and Verger state that the intercalary period cannot be defined precisely, that each case must be judged separately. They formulate the following rule:

> The intercalary period should be neither too short nor too long, that is, from a period of months to two or three years. A period of from one to six months is probable; that of from six months to thirty months is very probable; beyond thirty months is less and less probable. An intercalary period without any cephalic symptoms makes less likely the relation of cause and effect between trauma and dementia paralytica. This relation already probable or very probable, with an intercalary period of a month or less and of thirty months or more, can perhaps be considered as certain if there has existed some cephalic symptoms sufficiently violent to explain incapacitation, *a fortiori,* when these symptoms are those of organic lesions such as epileptiform crises. With an intercalary period greater than thirty months, the relation of cause and effect can be admitted only if definite cephalic symptoms as headache, vertigo and repeated epileptiform paroxysms with or without auditory symptoms are persistently present.

These authors give in detail in their monograph a number of cases of what they regard as post-traumatic dementia paralytica and which have a variable intercalary period.

Some writers in discussing the intercalary period simply state that it should be neither too short nor too long, provided other circumstances, essentially those enumerated by Regis and Verger, are present.

Ribierre [21] accepts an intercalary period of many months to many years if the foregoing circumstances are operative.

The intercalary period should not exceed one or two years according to Meyer.[26] The maximum period as given by Benon [33] is one year.

Berger [19] fixes the period more precisely than other writers. He believes that dementia paralytica should be demonstrated by a medical examination at the latest six months after a trauma. In the absence of such examination, the latest is one year in which layman should have noticed symptoms of dementia paralytica. Froissart,[28] on the other hand, believes that, since the intercalary period is difficult to establish, it is useless to take account of it.

To define an exact period during which symptoms of dementia paralytica should appear in order to incriminate the trauma is too arbitrary in view of the inexact knowledge of the evolution of the pathologic process of the disease. Moreover, dementia paralytica has such an insidious beginning that it cannot be determined with certitude just when the disease appeared. In a given case it may be impossible to differentiate post-traumatic symptoms from those of a beginning dementia paralytica.

Again, the interval now discussed will necessarily vary depending on whether the pathologic process of dementia paralytica existed before the trauma or whether trauma inaugurated it; in the former event, on how far the pathologic process was advanced at the time of trauma. The Regis and Verger formula therefore appears more valid than one in which the intercalary period is arbitrarily fixed.

Any conclusion as to the relation of cranial injury to a subsequently appearing dementia paralytica should not be reached solely on the length of time between the injury and the appearance of the disease, but rather by correlation of the history antedating the injury; the nature of the injury; the character of the post-trau-

matic symptoms, and their relation to the appearance of diagnostic symptoms of dementia paralytica.

In view of the foregoing considerations there has been a rather general judicial acceptance of the etiologic rôle of trauma in the causation of dementia paralytica, subject to the foregoing reservations. In these circumstances the extreme view that trauma was not a factor is unfair to the patient and his dependents.

THE MEDICOLEGAL STATUS OF THE RELATION OF TRAUMA TO DEMENTIA PARALYTICA

In medicolegal discussion of the relation of cranial injury to dementia paralytica in the type of patient discussed in group 3, the question has been asked whether or not the injured person would have developed dementia paralytica in the absence of the injury. It is obvious that this question cannot be answered scientifically. However, the opinion of Mott [32] is pertinent: that in a certain number of cases in which head injury had occurred it might be assumed that, had there been no head injury, dementia paralytica would not have ensued.

Ribierre [21] believes that from the medicolegal point of view the status of the cranial injury in the type of patient in group 3 is the same as if it were scientifically demonstrated that the trauma could all at once create dementia paralytica.

The following is Calvi's [38] summary of the medicolegal status of the relation of trauma to dementia paralytica:

> The medicolegal view, wholly practical, frees the medical expert from etiologic discussion. The relation of trauma to dementia paralytica is not an exclusive cause but is an occasional cause. Three types of cases may be distinguished: (*a*) If dementia paralytica succeeds a traumatism after a long period of calm and after complete recovery from post-traumatic symptoms, it cannot be imputed to the traumatism. (*b*) Dementia paralytica appearing immediately after traumatism can be considered as existing prior to such injury. Here the traumatism has disclosed the condition, which it aggravates and the evolution of which it accelerates. Indemnity should be calculated on the rate of absolute and permanent incapacity based on the probable time of incapacitation, without the intervention of trauma. The duty of the medical expert is to appreciate the aggravation by trauma. (*c*) A probable if not certain relation between the trauma and dementia paralytica can be admitted if it can be shown that the injured was in good mental health before the injury; that the traumatism was followed by phenomena evidencing violent injury, blow or intense shock; that the intervening period between the dementia paralytica and the injury is neither too short nor too long; that during this period there are phenomena of traumatic origin which gradually emerge into those indicating the appearance of dementia paralytica in the course of evolution.

Regis and Verger summarize the medicolegal aspect as follows:

> There exists a medicolegal traumatic dementia paralytica whose necessary and sufficient proof resides in the existence of a preceding trauma produced under conditions of localization of intensity and of succession in time, recognized and determined by unanimously accepted rules. This idea, purely medicolegal, does not contradict the scientific aspect of syphilis as the cause of dementia paralytica. Considering that syphilis is a factor in only a limited number of all syphilitic patients, that in the actual state of science it cannot be affirmed in a given case that syphilis alone would have been sufficient to cause the dementia paralytica without the balance of trauma, places on the trauma the medicolegal responsibility for the malady. The possibility and frequency of trauma being the revealer of dementia paralytica, more or less latent, but existing prior to injury, should make the medical expert very circumspect in the establishment of a relation of cause and effect and emphasizes the necessity of a detailed study of the antecedent history.

It is our opinion that the four preceding paragraphs of the section gives an adequate summary of the proper present-day status of the problem from the medicolegal or practical point of view. Each case must then be considered on its own merits and the physician must try to evaluate (1) the effect of the trauma on the intracranial contents, (2) the meaning of symptoms during the intercalary period, and (3) the probable modification of the patient's usefulness and longevity.

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38. Calvi, L.: La paralysie générale post-traumatique, Thèse de Bordeaux, 1910, Rev. Neurol. **2**: 447, 1911.

THE TREATMENT OF DEMENTIA PARALYTICA

WITH HYPERPYREXIA PRODUCED BY DIATHERMY *

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In 1918 Wagner Von Jauregg [1] announced his treatment of dementia paralytica by inoculation with malaria. Since then numerous articles have appeared by various workers in the United States and abroad. The literature is voluminous but the consensus seems to be that about 33 per cent of the patients treated by this means go into a clinical remission. Other forms of fever treatment have been gradually introduced: noticeably, relapsing fever by Plaut and Steiner,[2] sodoku, or rat bite fever, by Solomon, Berk, Theiler and Clay [3] and the injection of foreign protein in the form of typhoid vaccine by Kunde, Hall and Gerty.[4]

The literature is filled with vast differences of opinion as to the action of these various forms of hyperpyrexia. Schamberg [5] has shown that rabbits inoculated with syphilis recover when treated by inducing artificial fever. Breutsch and Bahr,[6] on the other hand, believe that clinical remissions in dementia paralytica result from a response of the reticulo-endothelial system to the malarial organism, and that the height of the fever bears little, if any, relation to the question of recovery. Freeman [7] has shown that the brains of patients with dementia paralytica in clinical remission after malarial treatment show no active syphilitic lesions while the rest of the organs often show the typical pathologic changes of late syphilis.

The production of fever without the introduction of foreign proteins should, we believe, settle this con-

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the authors' reprints.

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* From the Department of Neuropsychiatry, Northwestern University Medical School, the Cook County Psychopathic Hospital, and the Department of Physical Therapy, Northwestern University Medical School.

1. Von Jauregg, Wagner: Psychiat. neurol. Wchnschr. **20**: 22, 1918.
2. Plaut, F., and Steiner, G.: Ztschr. f. d. ges. Neurol. u. Psychiat. **53**: 103-120, 1920.
3. Solomon, H. C.; Berk, A.; Theiler, M., and Clay, C. L.: The Use of Sodoku in the Treatment of General Paralysis, Arch. Int. Med. **38**: 391-404 (Sept.) 1926.
4. Kunde, M. M.; Hall, G. W., and Gerty, F. J.: General Paralysis: The Effect of Nonspecific Protein Therapy on the Blood and Spinal Fluid, J. A. M. A. **89**: 1304-1308 (Oct. 15) 1927.
5. Schamberg, J. F., and Rule, Anna M.: Studies in the Therapeutic Effect of Fever in Experimental Rabbit Syphilis, Arch. Dermat. & Syph. **14**: 243 (Sept.) 1926.
6. Breutsch, W. L., and Bahr, M. A.: J. Nerv. & Ment. Dis. **67**: 209-223 (March) 1928.
7. Freeman, W.: The Malarial Treatment of Paresis, Extracerebral Pathology and Its Bearing on the Modus Operandi, Am. J. Syph. **14**: 360 (July) 1930.

troversy. With this end in view we began our experiments with laboratory animals subjected to heat by means of diathermy, and in a recent article [8] published the results of these experiments on animals and man. Mehrtens and Pouppirt [9] have since that time published a method of producing fever by hot baths, and include among other material results obtained in the treatment of eleven cases of dementia paralytica.

The successful treatment with diathermy depends on certain mechanical factors necessary to produce elevation of temperature, maintain it, and prevent burns to the patient. The prime requisites are properly constructed electrodes, a machine powerful enough to give sufficient energy, and proper insulation of the patient. The electrodes must have an extensive edge because the current has a tendency to concentrate along the edges. Fenestration of the electrodes is, therefore, absolutely necessary. Furthermore, when extensive areas of a patient are treated with large amounts of current, ranging between 4,000 and 6,500 ma., varying resistances are encountered depending largely on body thickness. This is especially true when the treatment is carried on for many hours. In order to force 4,000 ma. through the body with safety, the electrodes must be as large as possible. Figure 1 shows the typical back electrode and figure 2 the typical front electrode extending over the chest and abdomen, the latter for use in the application of currents up to 4,000 ma. The entire back must be covered by one electrode and the entire chest and abdomen by another. The region just above the iliac crest is the thinnest part through which the current will have to travel, and here burns are most likely to occur whenever currents above 4,000 ma. are employed. With milliamperage below 4,000 this can be disregarded, but above this figure it is necessary to shunt a rheostat into the circuit so arranged as to provide a passage of two thirds of the current through the chest and one third through the abdomen. Figure 3 best describes the split electrode used for this purpose. Figure 4 shows the machine and rheostat in use. This experimental machine and rheostat was built for us by a well known manufacturer of physical therapeutic apparatus and can deliver 8,000 ma. of current. Under load this apparatus functions with a voltage varying between 35 and 100, and a frequency between 500 and 1,500 kilocycles. Insulation of the patient is easily accomplished by means of seven blankets and one rubber sheet. The electrodes are held in place with a close fitting jacket which prevents slipping and maladjustment. Figure 5 shows the application of the electrodes; figure 6, the electrodes and jacket in place. Figure 7 shows a patient in bed undergoing treatment with the usual commercial high frequency machine.

Thus temperatures can be produced in any patient or, indeed, in a normal human being. The rate of the rise in temperature depends entirely on the mass of the patient, the amount of current introduced and the efficiency of the insulation. The height of the temperature and the time that such temperatures are maintained depend on the same factors. Any type of curve can be produced at will. As an example, we show the first curve, figure 8, in a patient weighing 119 pounds (54 Kg.) and 71 inches (180 cm.) in height. Here, the rise is very rapid and because of this, the current was turned off when the rectal temperature reached 105.4 F. After this the patient's temperature rose to 106.8 F.; the covering was removed and a very quick drop in temperature resulted. This is a poor curve from the therapeutic standpoint. The second curve, figure 9, shows a somewhat slower rise with a maintenance of the temperature for six and a quarter hours. Some patients maintain their temperatures without additional current for long periods of time, but some need a second, third and fourth application in order to maintain their temperature. In the second curve this was necessary. This patient weighed 141 pounds (64 Kg.) and was 69 inches (175 cm.) in height. The third curve, figure 10, on the other hand, shows a temperature above 103.5 F. maintained for eight and three-fourths hours by a single application of less than 4,000 ma. It is interesting to note that this patient weighed only 98 pounds (44.5 Kg.) and was 61 inches (155 cm.) in height. In the beginning the covers were removed

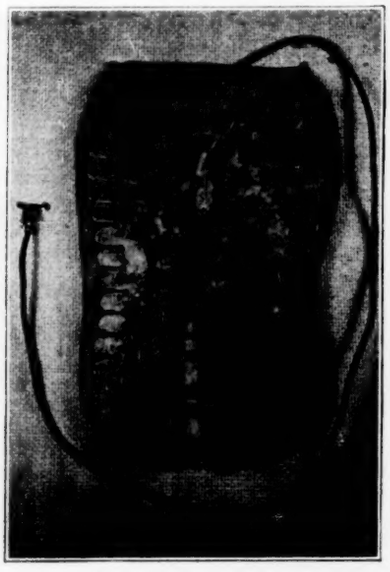

Fig. 1.—Back electrode.

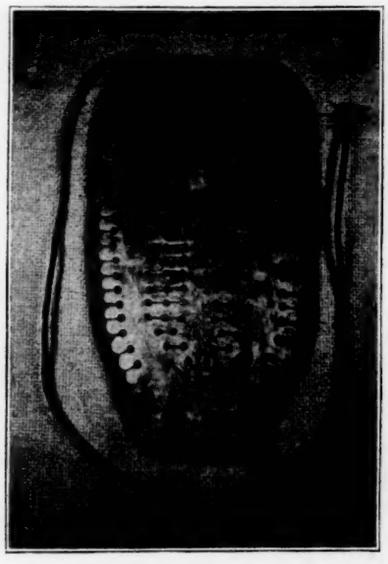

Fig. 2.—Front electrode, for use with current up to 4,000 ma.

Fig. 3.—Splint front electrode, for use with current above 4,000 ma.

8. Neymann, C. A., and Osborne, S. L.: Illinois M. J. **56**: 199 (Sept.) 1929.

9. Mehrtens, H. G., and Pouppirt, P. S.: Hyperpyrexia Produced by Baths, Arch. Neurol. & Psychiat. **22**: 700 (Oct.) 1929.

from the patient because the temperature was too high. A drop resulted, but on being covered again the patient showed a long continued rise which was finally stopped by uncovering the patient a second time, after eight hours.

Certain physiologic phenomena have been observed during and after treatment. The blood pressure at first shows a systolic rise and later a diastolic drop; thus

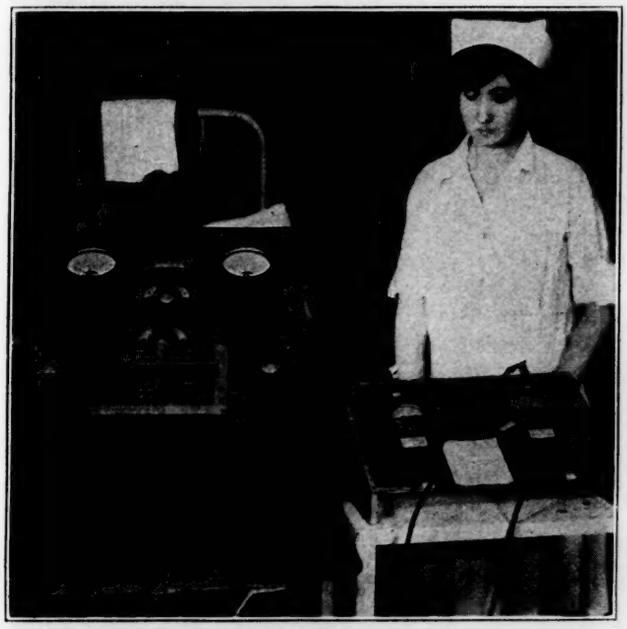

Fig. 4.—Large diathermy machine and rheostat in use.

a pronounced increase in the pulse pressure is frequently observed and pressures of 160 systolic and 0 diastolic occur. These are not due, we believe, to aortic dilatation but rather to an increase in the heart rate and a dilatation of the peripheral vessels. After a series of treatments the blood pressure, both systolic and diastolic, is uniformly decreased and remains permanently at a lower level. This phenomenon was shown in every case. The fourth curve, figure 11, best illustrates the initial rise of the systolic pressure and corresponding fall of the diastolic. The diastolic rises directly after the current has been turned off. The reason for this is problematic. No heart murmurs occur during treatment.

The blood picture changes. In general there is a concentration phenomenon. Red blood corpuscles, white blood corpuscles and hemoglobin increase. Increases of a million red cells and from 3,000 to 4,000 white cells are common. There also seems to be a slight relative increase of the polymorphonuclears and eosinophils and a corresponding decrease of small and large mononuclears. Chemical examination of the blood reveals decided changes. There is an increase in the nonprotein nitrogen and uric acid content of the blood. The carbon dioxide capacity of the plasma decreases while the chlorides in the blood and the calcium in the serum show only a slight tendency toward an increase.

Twenty-five cases of dementia paralytica were treated at the Cook County Psychopathic Hospital during the past eighteen months. All the patients had typical dementia paralytica and fell into four more or less artificial types. Three were of the depressed type, seven of the grandiose type, eleven were slowly dementing individuals, and five were totally demented when treatment was begun. All in all, these patients were rather good risks from the standpoint of therapy, except the five last mentioned, who were hopeless from the beginning judged by the general standards accepted for treatment with malaria. All patients had an increase in the cell count varying from 20 to more than 100 cells, a positive Pandy reaction, a four plus Wassermann reaction of the spinal fluid, and a typical paretic colloidal gold curve. The dementing patients all showed grave defects in memory for past and recent events, retention and judgment. The other types were clearly representative of their groups.

We have been very critical in judging the results obtained, the more so because our results are so unusual. We divided the patients into three groups. First were those that made an absolute social adjustment and were able to maintain themselves outside the institution without supervision. This embraced sixteen individuals, or 64 per cent of the entire number. The second group were decidedly improved and were able to maintain themselves with some supervision at home. This group consisted of two persons, or 8 per cent of the total number. The unimproved group, seven in number, consisted of the five patients who were totally deteriorated when treatment was begun, one patient of the depressive type and one belonging to the grandiose type, who died from cerebral hemorrhage. It is of course impossible to prognosticate the therapeutic results of any form of treatment with absolute certainty. From past experience with malaria and tryparsamide, we believe that dilapidated and deteriorated

Fig. 5.—Application of electrodes.

patients never recover when this deterioration has extended over a period of years.

The serologic changes did not correspond to the amount of clinical improvement. There was a decrease in the number of cells in all cases with but two exceptions. The Pandy reaction occasionally decreased in intensity; the colloidal gold reaction decreased in intensity in ten cases and became practically negative in five of these. The latter usually changed from a typical

paretic to an atypical luetic zone curve. The Wassermann test of the spinal fluid showed but little change.

The number of treatments varied from a minimum of six to a maximum of forty-nine. The average was fifteen treatments. All in all, approximately 350 treatments were given in this series, as well as about 150 treatments in another series not described in this report. The treatments were given biweekly, the patients remaining in the Cook County Psychopathic Hospital during this time. The average length of hospitalization was a little more than three months. A certain amount of time was, of course, lost between the admission and the beginning of the treatment, as well as waiting for court proceedings and disposition of the patient after treatment had ceased. Table 2 gives a survey of these results. Most of the patients were referred to Northwestern University Free Dispensary, where they were tered anemias, jaundice or other complications so frequent in malaria. The great difficulty and danger of the treatment lies in burns. It is necessary to get a close contact between the electrode and the patient. An electrode jelly should be applied to the skin of the patient. The electrodes must be perfectly smooth and without rough or bent edges. In applying more than 4,000 ma., a split electrode with rheostat should be used. The current should be started gradually at about 3,000 ma. and not increased until the patient begins to perspire freely. It must be borne in mind that the final temperature overshoots the temperature reached when the current is turned off, proportionately to the abruptness of the rise. If the rise is abrupt, that is, within one and a half hours, the current should be turned off at 104.2 F. If the rise is very slow, three to four hours, the current may be kept on up to 105 F. Rectal

TABLE 2.—*Results of Treatment*

		Before Treatment							After Treatment					
Patient	Type	Cell Count	Pandy	Wassermann	Colloidal Gold	Days in Hospital	No. of Treatments	Hours Above 103.5 F.	Cell Count	Pandy	Wassermann	Colloidal Gold	Clinical Results	Comment
1. F. M.	Depressed	58	4+	4+	5554432100	124	10	12	3	3+	4+	5555543100	Remission	At work
2. W. Q.	Depressed	110	1+	4+	5544311000	307	48	132	6	1+	Neg.	0012210000	Improved	At home, still depressed
3. G. M.	Depressed	93	4+	4+	4433443100	211	49	190	60	3+	4+	5555421000	Unimproved	Committed to state hospital; change in type
4. R. C.	Grandiose	22	4+	4+	2534421000	64	9	10	..	...	...	.....	Remission	At work
5. G. G.	Grandiose	140	4+	4+	5554310000	39	8	17	81	3+	4+	4444431000	Remission	At work
6. H. H.	Grandiose	50	4+	4+	5555542100	69	14	30	130	3+	4+	5555543200	Remission	At work
7. W. C.	Grandiose	80	4+	4+	5555554320	109	17	48	35	3+	4+	1224311000	Remission	At work
8. H. W.	Grandiose	75	4+	4+	5555555420	253	32	87	25	3+	4+	5554310000	Remission	2 admissions; change in type
9. F. L.	Grandiose	80	4+	4+	2555551000	55	11	31	57	3+	4+	5555431000	Remission	At work
10. W. P.	Grandiose	68	3+	4+	4422231100	213	18	65	33	3+	4+	15555442100	Unimproved	2 admissions; died
11. G. W.	Dementing	55	3+	4+	5554432000	68	10	15	3	2+	4+	1124210000	Remission	At work
12. A. B.	Dementing	70	4+	4+	5554432100	46	12	30	22	4+	4+	5555554430	Remission	At work
13. H. B.	Dementing	106	3+	4+	5444310000	48	9	14	40	2+	4+	0122110000	Remission	At work
14. J. H.	Dementing	85	4+	4+	5555542110	47	9	18	98	4+	4+	5444233310	Remission	At work
15. E. H.	Dementing	22	4+	4+	4555542100	117	18	55	30	2+	4+	0012210000	Remission	At work; change in type
16. E. M.	Dementing	56	4+	4+	5555541000	46	10	22	46	4+	4+	5555542100	Remission	At work
17. A. V.	Dementing	73	2+	4+	1433332100	46	10	28	40	2+	4+	1112100000	Remission	At work
18. W. E.	Dementing	36	4+	4+	4433321000	61	11	27	35	3+	4+	0121100000	Remission	At work
19. M. N.	Dementing	22	3+	4+	4555551000	86	20	92	3	3+	4+	3554321000	Remission	At work; housewife
20. J. J.	Dementing	79	4+	4+	5555542100	62	11	38	..	...	...	.....	Improved	Physician, at home
21. G. I.	Very demented	50	4+	4+	4433100000	95	6	5	..	...	2+	.....	Unimproved	Committed to state hospital
22. D. N.	Very demented	71	3+	4+	4444331000	66	13	35	60	2+	4+	1342100000	Unimproved	Committed to state hospital
23. M. J.	Very demented	96	3+	4+	4455555310	64	10	27	43	2+	4+	3455320000	Unimproved	Committed to state hospital
24. V. M.	Very demented	45	4+	4+	5555521000	98	12	40	18	2+	4+	0032200000	Unimproved	Committed to state hospital
25. T. F.	Very demented	62	4+	4+	5555554310	71	9	53	50	4+	4+	5555543200	Unimproved	Committed to state hospital; died

examined from time to time and given several courses of tryparsamide. The sixteen patients in remission have remained out of the hospital over periods ranging from fifteen months as a maximum to four months as a minimum.

The technic of treatment has changed from time to time. At first we sought to produce temperature curves analogous to those produced by malaria. As stated before, we do not believe that this is the optimal type of curve and lately have attempted to keep the temperature above 103.5 F. for at least five hours, though some patients have been maintained at this temperature for nine hours. We have had no deaths resulting from treatment in these twenty-five cases. Two unimproved patients died, weeks after treatment had ceased. This factor alone would seem to indicate a certain preference for this type of treatment. The number of treatments given seem to have no effect on the patient. Seven patients have been given more than fifteen treatments, and three of these were given more than thirty treatments. We have not encountemperatures should be taken every fifteen minutes in the beginning and every five minutes after the temperature reaches 104 F. We have observed one case, not reported in this series, in which the final temperature reached 108.5 F. An acute nephrosis with albuminuria and many hyaline casts resulted and lasted three days. In the beginning, we produced five or six minor and two severe burns. In one case the electrodes had not yet been perfected and in another the patient became violent and tore the electrodes apart and all the current passed through half of the electrode for a number of hours. A deep burn around the entire edge of the electrode resulted. This took three months to heal. Treatment was then resumed without further trouble. In order to avoid such complications it is best to restrain the arms and legs of the patient during treatment or to give morphine and scopolamine. We believe restraint preferable. The patient, and, in fact, any normal individual, goes into a period of excitement just after he reaches a temperature of 102 F. This is followed by a period of comparative quiet at 103 F. or above. The

patients are, generally speaking, very uncomfortable. Water should be given in copious quantities and any complaint of burning should be carefully investigated. Since we have treated the most violent types encountered in the Cook County Psychopathic Hospital, we believe that it is practical to apply this therapy to any

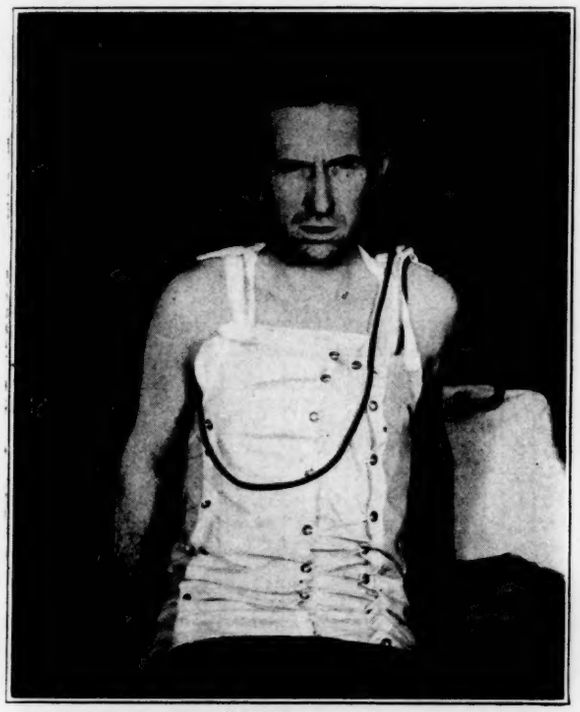

Fig. 6.—Electrodes held in place with jacket.

type of patient with dementia paralytica. The more quiet and cooperative the patient is, the easier it is to administer treatment.

Perhaps the most interesting serologic factor is the lack of coincidence of such improvement with clinical recovery. The seven clinically unimproved cases showed about as much serologic improvement as the eighteen cases which are in remission or improved. Only one case, case 2, became completely negative after treatment. This individual is decidedly improved but so depressed that he is as yet in no condition to resume work. Another interesting fact is the reduction of the blood pressure, both systolic and diastolic, after a series of treatments. Every patient showed a reduction of blood pressure ranging from 10 to 45 mm. of mercury. Typical of this is patient 2, whose blood pressure decreased from 145/85 to 100/80 after forty-eight treatments. We look on the described phenomena in the blood picture and blood chemistry as merely an action of concentration due to profuse perspiration. The average patient loses from 1 to 3 pounds in weight during the treatment in spite of the fact that copious quantities of liquid are given.

SUMMARY

1. A method for producing hyperpyrexia in man has been described.
2. Twenty-five patients with dementia paralytica have been treated.
3. Sixty-six per cent went into a clinical remission. Eight per cent were markedly improved.
4. No serious harm resulted to these patients from the treatment and there were no deaths in this series directly or indirectly ascribable to the treatment.
5. Certain physiologic phenomena associated with hyperpyrexia produced by diathermy have been described.
6. This is a conclusion of a preliminary report published in the *Illinois Medical Journal* in September, 1929.

ABSTRACT OF DISCUSSION

DR. M. T. KOENIG, Elgin, Ill.: At the Elgin State Hospital we have treated fifty patients so far, with the following results: improved, 48 per cent; no change, 40 per cent; worse since the treatment, 6 per cent; died, not directly or indirectly because of the treatment, but died since treatment, 6 per cent. Of the improved group, 50 per cent are in complete remission; of these, 33 per cent returned to their former occupations and 17 per cent are in complete remission but did not return to their former occupations because of the nature of their occupations. Those improved and not in complete remission constitute the other 50 per cent. Our cases might be divided into two big groups: Twenty-seven cases were of from one to five years' duration, and twenty-three cases were under one year's duration. Of the old cases, remission occurred in 14 per cent and in the recent cases in 34 per cent. Improvement in the old cases occurred in 33 per cent, in the recent cases in 65 per cent. Forty-eight per cent of the old cases showed no change; 30 per cent of the recent cases showed no change; in 11 per cent of the old cases the condition became worse; in none of the recent cases did it become worse. As to types, among thirty-four demented patients, nine were of the expansive type, four depressed, two manic, and one juvenile. The results were as follows: Of the thirty-four demented patients, sixteen improved; of these, five went into remission. Of the expansive group, of which there were nine, four improved and four went into remission. Of the manic, of which there were two, one improved and one went into remission. It is interesting to note the improvement found in the most resistant type of dementia paralytcia, i. e., the depressed. Of four patients of this type, three improved; of these, two are in complete remission and back at their former occupations. We also had opportunity to compare our results with the treatment introduced by Drs.

Fig. 7.—Patient under treatment.

Neymann and Osborne with the results we obtained with malaria and rat-bite fever. Diathermy showed 48 per cent improved; malaria, 45 per cent improved. Rat-bite fever gave only 20 per cent of improvement. Six per cent were worse after diathermy; after malaria, 7 per cent; after rat-bite fever, 10 per cent. In the improved cases, diathermy gave 24 per cent

complete remission; malaria gave 9 per cent complete remission, and rat-bite fever gave 6 per cent complete remission. In our experience the diathermy treatment was shown to be of much greater value not only from the clinical point of view but also from the therapeutic.

DR. H. G. MEHRTENS, San Francisco: I was especially interested in this paper because I had had the opportunity to try heat as produced from baths on patients with dementia paralytica, and I know how difficult it is to get a result. It was my conclusion that heat itself was important. The technic of producing fever described here seems to me far and away the best thus far reported. It is much better than that which is achieved by means of baths for the very reason that the fever can be kept up in adequate degree and for a long enough period to get results. The poor results reported in the treatment of dementia paralytica by means of fever alone have been due to the inadequate amount of fever and the small time element that has been allowed. My associates and I were able to keep up our treatment only two hours at most; we felt that it was quite important to get more fever and to hold it longer, but in raising the temperature by means of baths it is inadvisable to go further than two hours. The serologic results reported here are of interest. The authors pointed out that they were not very marked but I would venture to anticipate that the later results are going to be good. It has been my experience that as the months go on the serologic condition improves; that the clinical improvement antedates the serologic improvement sometimes from six to eight months. It has been my experience that fever alone or antisyphilitic therapy alone is not as efficient as both combined. That is what might be expected. If the results were to follow van't Hoff's law we would anticipate that the clinical improvements following fever and antisyphilitic therapy should be more marked than with either alone.

DR. F. J. GERTY, Chicago: It is no longer necessary to defend the general principle of fever therapy in dementia paralytica. It is simply a question of the mechanisms by which the results are produced and with the comparative value of the different fever-producing methods. Is it true that fever alone is what produces the favorable result? In the authors' patients the nonprotein nitrogen in the blood was reduced by one half at the end of the series of treatments. Dr. Kunde, using nonspecific protein shock therapy, found that some patients who had little or no fever made decided clinical improvement. Fever seems to have a great part in producing the results. Whether it is the sole factor or whether it acts directly, I am not certain. With the original malaria method and later with other infectious fever-producing methods excellent results were secured, but several considerations made the search for noninfectious means of producing fever inevitable. The nonspecific protein method is readily available at any place. It does not always produce as high a degree of fever as the authors can easily produce with their method. However, properly managed, this simple method produces excellent results. Dr. Mehrtens has used dry and moist baths to produce fever in treating patients with dementia paralytica. My own experience has been limited with these methods. In using them I believe it would be safest to check the rectal temperature through thermocouples. The chemotherapeutic method of producing fever by injecting sulphur intramuscularly, with which Dr. Charles F. Read is now working, does not compare with the method described here. I have followed the results in sixteen cases. The method here presented has certain advantages. One can count on attaining a predetermined degree of temperature, and that degree of temperature can be maintained for a definite period. The method is now quite safe even from the standpoint of avoiding burns, which were at most a minor disadvantage.

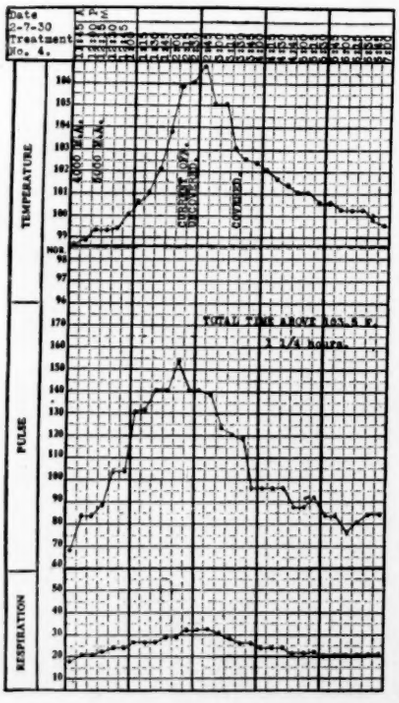

Fig. 8 (case 1).—Abrupt rise and fall of temperature.

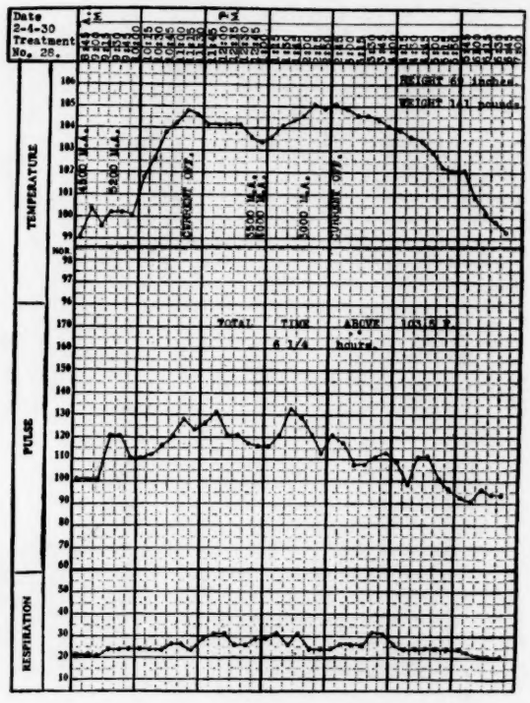

Fig. 9 (case 3).—Temperature maintained by repeated application of current for over six hours.

DR. R. P. MACKAY, Chicago: Any form of fever therapy for dementia paralytica must meet certain fundamental requirements. The first of these is that the fever should be prolonged and high, and the duration and degree of fever should be under control. The next requirement is the safety of the patient. Malaria has a mortality of its own, and any form of fever therapy that has a lower mortality should be preferred. The third requirement is the comfort of the patient. In discussing the safety of diathermy in the treatment of dementia paralytica, the electrocardiographic changes shown today are interesting. The Q-R-S complexes were reduced in height and slurred, the T waves were flattened and in some cases the T wave was inverted. I should like to ask whether these changes are temporary and if so how long they last. It seems to me that any method of treatment whereby large amounts of heat are put into the body over the heart and which produces these important electrocardiographic changes should be carefully examined with an eye to the patient's safety. Dr. Hall and I have treated half a dozen cases of dementia paralytica with sulphur. This treatment was used first by Schaefer. A sublimated sulphur suspension in olive oil is injected into the upper third of the thigh beneath the fascia lata. After twelve hours the patient has a temperature of 101 or 102 F. and this rapidly mounts within an hour or two to from 103 to 105 F., such a temperature often persisting for twenty-four or thirty-six hours. Considerable local pain occurs in some cases, but this usually lasts only twenty-four hours. There is no chill. The dosage is increased by 1 or 2 cc. each time, and because of the long duration of the fever only two injections a week are practicable. We are not able to report as yet any of our clinical results, because we have treated only a few patients. I would urge

that these methods of treating dementia paralytica by fever should always be followed by other antisyphilitic measures. There should be no neglect in treating these patients with other methods of known value in the treatment of dementia paralytica. I believe that tryparsamide has its greatest usefulness as an adjuvant to fever in the treatment of dementia paralytica.

DR. B. J. SHERMAN, Chicago: I have used this treatment in about eight cases and have had about 45 per cent improvement. Some patients were physically so bad, they were such poor risks that other treatments would have been impossible.

DR. HAROLD G. WOLFF, Baltimore: I should like to know what type of hyperpyrexia is produced: Is it due to a disjunction of the heat-regulating apparatus, such as is produced by foreign protein injections due in this instance, however, to breakdown of the patient's own tissue, or is it due to "added heat" with the prevention of heat loss?

DR. GEORGE B. HASSIN, Chicago: Are there any contraindications to this fever? It seems to me that the condition of the heart and the kidneys should sometimes offer certain objections to this method of treatment.

DR. MEYER SOLOMON, Chicago: I should like to know how soon after the treatment has been ended the improvement begins. In the cases that had remission, how long did it take on the average before the completion of the remission showed up? In other words, over how many months?

DR. CLARENCE A. NEYMANN, Chicago: As to Dr. Mehrtens' question about the application of tryparsamide and other therapeutic agents with hyperpyrexia, it might be stated that we are now giving injections of tryparsamide at the height of the temperature. We are not in a position to announce our results but we believe that they are encouraging. I have examined many of Dr. Koenig's patients and can state that they were for the most part of the ordinary rather deteriorated type found in the state hospitals. It was my opinion that he would not achieve very good therapeutic results with most of them. Nevertheless, he seems to have accomplished a great deal. Dr. Gerty's question as to the real action of hyperpyrexia cannot be answered. The reduction of the nonprotein nitrogen of the blood serum after a series of treatments might give some clue; the circulatory changes might also explain the therapeutic results. Dr. Mackay's remarks on the electrocardiograms were timely. I purposely selected the electrocardiogram that showed the greatest changes directly after treatment. All electrocardiograms showed normal curves twenty-four hours after treatment. We have given about 500 of these treatments without a fatality, and Dr. Koenig has given at least that many at Elgin. We did have one fatality with Dr. Mehrtens' form of treatment; this was due to our own overzealousness and ignorance. We experimented with hot baths before his method appeared in print. Hot baths should not be attempted without a thermocouple in the rectum. We took mouth temperature while giving hot baths. Temperatures were always taken by rectum at fifteen-minute intervals until the fever reached 104, and then at five-minute intervals. Dr. Hassin's question regarding contraindications can best be answered by stating that we have lately treated patients having diabetes, nephritis and organic heart conditions without a single fatality, and without dangerous clinical manifestations. Good nursing personnel is essential. In one case not reported in this series the temperature rose to 108.5 as the result of negligence. The patient was immediately immersed in an ice bath and thus we were able to reduce the temperature to 102 in an hour. When the patient was put back to bed, the temperature again rose to 104. We kept this patient uncovered and applied ice water for several hours. A nephrosis with albuminuria and masses of hyaline casts resulted and lasted three days. I cannot answer Dr. Wolff's question. After three years' experience with hyperpyrexia we believe that there is no such thing as a heat-regulatory apparatus in the formerly accepted sense. Heat is easily produced within the human body by external influences. Dr. Solomon asked how many treatments it took before a remission. Most remissions in the cases that turned out well started between the fifth and the tenth treatments.

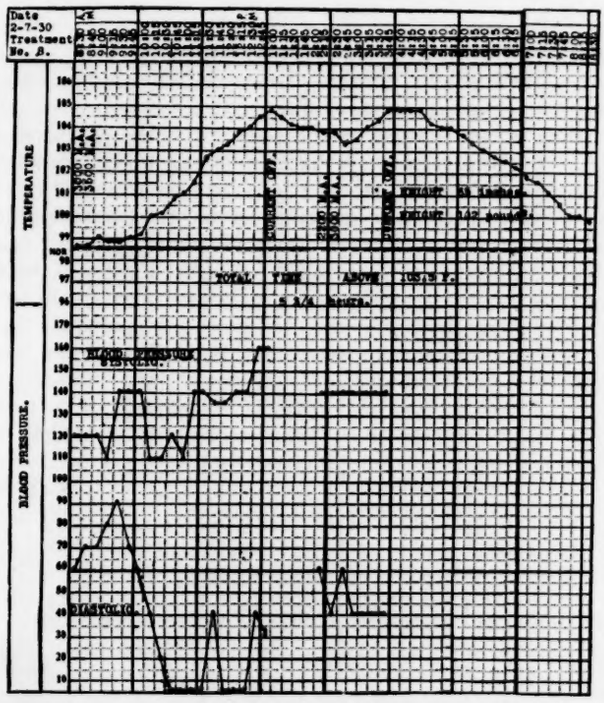

Fig. 11 (case 19).—Increase in pulse pressure by rise of systolic and fall of diastolic blood pressure.

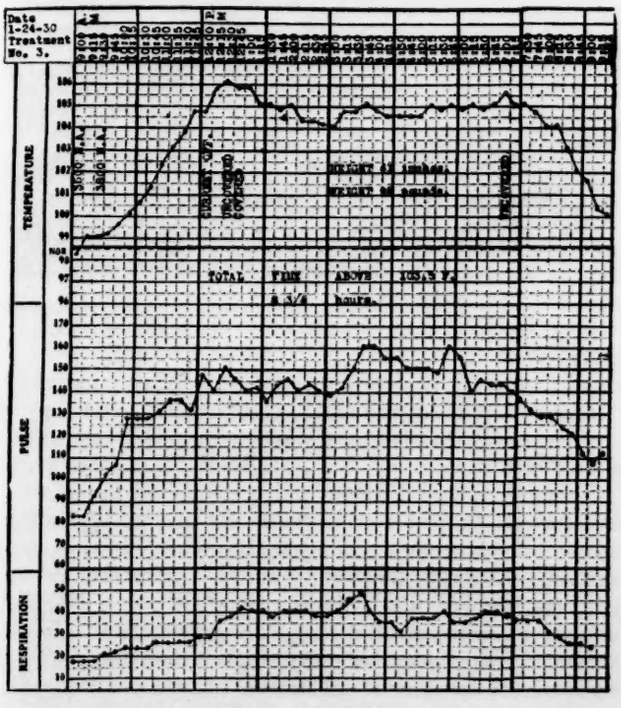

Fig. 10 (case 25).—Temperature maintained for over eight hours by a single application of the current.

The Cost of War.—The front line in a great war is making every effort to destroy human life, while behind the lines the medical corps exerts every effort to safeguard human life. The last war demonstrated a surprisingly great percentage of salvaged human life. The total number of men engaged in the war including both sides was fifty-six millions. In four years and three months they killed 7,553,000 men. The direct cost of the war was $186,355,677,000. To kill one soldier it cost $26,620. There were killed, wounded and missing 31,386,000. Seven million five hundred thousand were killed or incapacitated during every year of the war.—McLean, Angus: *Bull. Wayne County M. Soc.*, Dec. 9, 1930.

JAMAICA GINGER PARALYSIS

AUTOPSY OBSERVATIONS *

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AND
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During the spring and early summer of 1930 many cases of multiple paralysis occurred throughout the country, following the drinking of a certain type of jamaica ginger. Most of the patients at the Worcester City Hospital admitted that they had taken jamaica ginger so labeled, either as a beverage or as a medicine, from four days to over two weeks previous to the onset of paralysis. There was in all patients a paralysis of the extensor muscles of the feet and toes, and most patients showed a paralysis or weakness of the extensors of the hands and fingers. Most of the patients also showed marked weakness in flexion of the fingers and adduction of the thumbs.

Of the sixty-two patients in the hospital, three men died from causes other than from the sequelae of jamaica ginger poisoning. These three cases were examined post mortem and the anatomic diagnoses as given on the protocols are herewith presented.

CASE 1.—
Vegetative endocarditis of mitral valve.
Fibrinous pericarditis.
Periportal cirrhosis.
Polyneuritis.

CASE 2.—
Multiple abscesses of both kidneys.
Pyelonephrosis of both kidneys.
Cystitis.
Suprapubic cystotomy.
Generalized arteriosclerosis.
Sacral decubitus.
Polyneuritis.

CASE 3.—
Myocardial degeneration.
Tubular nephritis.
Chronic passive congestion of liver.
Generalized arteriosclerosis.
Collapse of right lung with pleural adhesions.
Perisplenitis.
Cysts of softening of right frontal lobe of brain.
Polyneuritis.

These patients had paralyses for about eight weeks before death.

In view of the clinical condition that the patients presented, the pathologic changes were sought in the nerves supplying the paralyzed muscles and in the anterior horn cells of the spinal cords. To this end the following tissues were secured and placed in a diluted "solution of formaldehyde" U. S. P. (1:10): spinal cord, sections of the radial, the anterior tibial, the external popliteal and the sciatic nerves. The posterior tibial was also secured in two cases. There were no gross pathologic changes in the spinal cords or peripheral nerves. The one brain examined showed a few cysts of softening the size of a pea on the base of the right frontal lobe.

TECHNIC

Following the fixation in formaldehyde, all the nerves mentioned, several pieces of the lower half of the spinal cords, several pieces from each cauda equina and the organs from each case were carried through paraffin, cut, and stained with hematoxylin and eosin. All nerves were sectioned both transversely and longitudinally.

The peripheral nerves and several of the lower anterior roots of one spinal cord were further prepared by cutting in the longitudinal axis with the freezing microtome at 10 microns. These were stained by the Bielschowsky method to demonstrate axis cylinders, by the Spielmeyer method to demonstrate myelin sheaths, and by sudan III to demonstrate free fat. Several sections also from the lumbar region of the cords were stained with sudan III.

MICROSCOPIC OBSERVATIONS

Hematoxylin and Eosin: The study of the organs confirmed the anatomic diagnoses in each case. Sections of the spinal cords showed in the anterior horn cells a migration of the nucleus to the periphery, absence of nucleolus in many instances and the formation of fine granules in the cytoplasm.

Sections of the cauda equina were negative in two cases. Case 3 showed in one section (longitudinal) a small focus of hemorrhage and a polymorphonuclear reaction in what appeared to be an area of nerve degeneration, although above and below this point the nerve appeared normal.

Fig. 1.—Radial nerve showing myelin sheath degeneration; Spielmeyer stain; × 400.

Transverse and longitudinal sections of the peripheral nerves, stained with hematoxylin and eosin, showed no definite pathologic changes. Jeter [1] in his report of an autopsy states that he found a thickening of the perineurium of the anterior tibial nerves. We are unable to demonstrate that the perineurium in the jamaica ginger cases was any thicker than the perineurium of the anterior tibial nerves of two control cases.

Spielmeyer Method for Myelin Sheaths: The peripheral nerves, namely, the radial, anterior tibial, external popliteal and sciatic, showed focal degeneration of the myelin sheaths (figs. 1, 2 and 3). It is true that the myelin sheaths of the axis cylinders were not all injured, nor did the degeneration necessarily extend throughout the entire section, but the extent and quality of the degeneration was much more marked than one would

* From the Department of Pathology, City Hospital.

1. Jeter, Hugh: Autopsy Report of a Case of So-Called Jake Paralysis, J. A. M. A. **95**: 112 (July 12) 1930.

expect to find in a normal motor nerve. In addition, the myelin sheaths outside the foci of definite degeneration did not have the clear-cut herring bone appearance of a normal nerve. The degenerated foci themselves were characterized by a widening of the sheaths and by the formation within of dark blue staining balls, circles and irregular fragments of myelin material. Some foci had apparently reached a greater degree of degeneration than others, as evidenced by the extent to which the myelin had broken up.

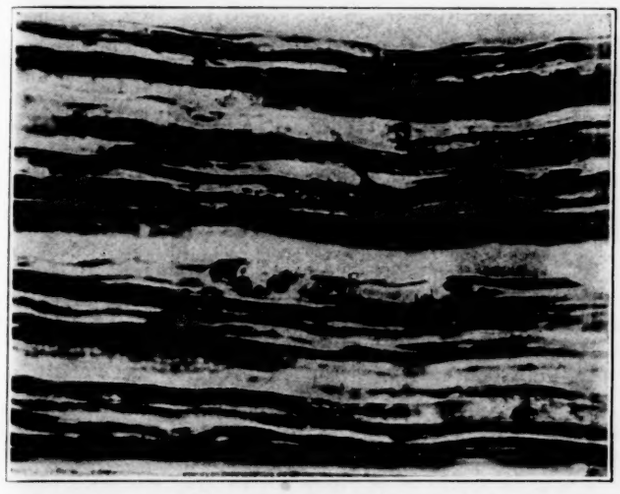

Fig. 2.—Anterior tibial nerve showing myelin sheath degeneration and irregular thickening of axis cylinders; Spielmeyer stain; × 400.

It is difficult to quantitate the amount of degeneration in each nerve. Certain sections would indicate that the external popliteal was injured more than any of the other nerves. The posterior tibial nerve and the sciatic at the level of the gluteal fold showed less degeneration than any of the others.

Anterior roots of the lumbar region of one of the cords showed no myelin sheath degeneration.

Definite hyperplasia of the Schwann cells was not made out in any of the nerves.

As normal nerves may show a little myelin sheath degeneration at times, it was deemed advisable to study the anterior tibial nerve of a control case by the Spielmeyer method. The anterior tibial nerve of a man, aged 64, who had no paralysis and died of coronary thrombosis, was studied. This nerve showed normal myelin sheaths with a regular and well defined herring bone appearance (fig. 4).

Bielschowsky Method for Axis Cylinders: All the peripheral nerves involved showed slight fusiform enlargements of the axis cylinders both inside and outside the foci of myelin sheath degeneration. In the foci of degeneration the axis cylinders could not always be followed throughout, owing either to a change in the horizontal plane or to complete degeneration.

Sudan III: Myelin sheaths in the course of degeneration reach the stage of neutral fat. Only a few orange colored globules of neutral fat were found in the foci of degeneration in the peripheral nerves, indicating that only a small amount of myelin had reached this stage at the time of autopsy.

Several sections of the three spinal cords taken from the lumbar region showed the presence of fine reddish-brown granules in the center and in the periphery of the cytoplasm of practically all the anterior horn cells. In some cells the nuclei were near the periphery and the nucleoli were absent, as noted with the hematoxylin and eosin stain. A few cells of the posterior horns showed similar changes.

COMMENT

Jeter [1] reported the autopsy of one case of jamaica ginger paralysis. His observations were: acute perineuritis of the cauda equina, thickening of the meninges of the brain and cord, thickening of the perineurium of the anterior tibial nerve and a moderate endarteritis of the vessels of the central nervous system. Our work bears out his observations in part; namely, the acute perineuritis of the cauda equina in one case. We were not convinced that the sections of the anterior tibial nerve showed any great increase in the thickness of the perineurium over those of two control cases. It is possible, however, that Jeter's patient lived longer after the onset of the paralysis than the patients whose cases are cited herein.

It is interesting to note that Turley,[2] in studying what appears to be the same case as that reported by Jeter,[1] and one other, found definite changes in the spinal cord, medulla and peripheral nerves, as revealed by sudan III, osmic acid and the Marchi stain. The spinal cord changes appear to be similar to those of the cases reported in this article. The sciatic nerve stained by the Marchi stain showed, according to Turley, some fibers all black; others contained black masses at the nodes of Ranvier or scattered along the internodal spaces.

Smith [3] states that the observations in some half dozen autopsies of jamaica ginger paralysis from the Cincinnati General Hospital showed essentially the same features as the three cases presented in this article.

To complete the picture one needs to know the etiology and prognosis of the disease. Smith and Elvove,[4] after careful analysis and animal experimentation, feel that the blame for the paralysis can be placed on triorthocresyl phosphate. Experiments are being carried on in this laboratory in order to compare the pathologic changes of the paralysis produced in animals

Fig. 3.—External popliteal nerve showing more extensive myelin sheath degeneration; Spielmeyer stain; × 400.

2. Turley, L. A.: Neuropathology Found in Cases with "Jake" Paralysis, J. Oklahoma M. A. **23**: 193 (June) 1930.
3. Smith, M. I.: Personal communication to the authors.
4. Smith, M. I., and Elvove, E.: Pharmacological and Chemical Studies of the Cause of So-Called Ginger Paralysis, Pub. Health Rep. **45**: 1703 (July 25) 1930.

by tricresyl phosphate with the pathologic changes found in human beings.

With reference to the prognosis, a follow-up clinic was held here from five to six months after the onset of the paralyses, and twenty-two patients returned. All of these showed definite improvement in finger and wrist motion. But most patients showed little or no improvement in extension of the feet. These facts are consistent with the nerve injury found, i. e., myelin

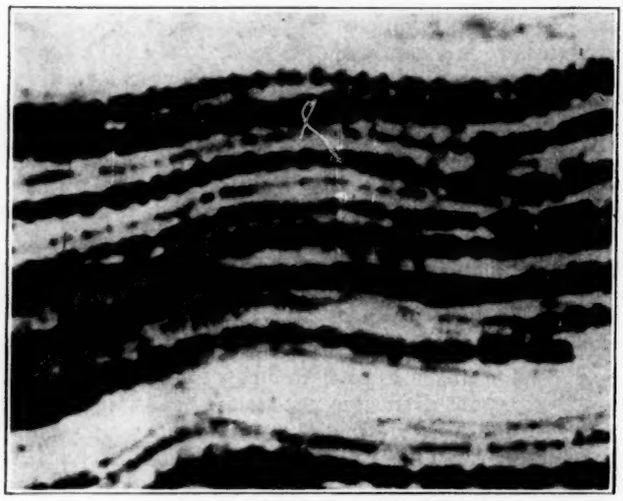

Fig. 4.—Anterior tibial nerve from a nonparalyzed control case; Spielmeyer stain; × 400.

sheath degeneration in the sciatic nerve at the level of the gluteal fold, which means that the axons must regenerate for a greater distance than in the arm, thus delaying the return of function to the foot. Further, the greater number of injured sheaths and axons in the external popliteal nerve would make for a more complete paralysis of the foot than of the hand. We can, therefore, look for an early improvement in the hands and a much delayed improvement in the motions of the feet in paralysis of this nature.

SUMMARY

The autopsy reports of three patients with jamaica ginger paralysis dying of other causes are presented. A study of the nerves shows an acute inflammation of one segment of the cauda equina in one case, and myelin sheath and axis cylinder degeneration of the radial, sciatic external popliteal, anterior tibial and posterior tibial nerves in all three cases. The degeneration is found as high as the gluteal fold in the sciatic nerve but not in the anterior roots of the lumbar cord.

These observations are consistent with the observations in a follow-up clinic in which it was found that all patients showed marked improvement of wrist and finger motion and little or no improvement of foot motion from five to six months after the onset of paralysis.

Early Medical Practice in Massachusetts.—The use of the word physician or doctor came into general use early. It is said that the earliest record of the term doctor is to be found in the archives of the Roxbury Church under the date of Nov. 5, 1668. There is also an allusion to "Dr. Emery of Salem" about the same period. All surgeons except the barber-surgeons were called chirurgeons. Among the more learned, the word physician was used somewhat earlier.—A Brief History of Medicine in Massachusetts, New York, Houghton Mifflin Company, 1930.

THE RATE OF HEALING OF ELECTROSURGICAL WOUNDS AS EXPRESSED BY TENSILE STRENGTH *

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The interest in electrosurgery shown during the last decade is due to the development of several valuable electrosurgical knives. The novel features of these knives depend on technical improvements in construction providing for:

1. A very high frequency oscillating current.
2. The elimination of the irritating "sparking" or spark jumps of the older machines, which produced muscle jerking and varying degrees of injury to tissues. Sometimes even charring is produced, which is entirely different from the effect desired.
3. Facility to modulate the currents very delicately, both in density and in penetration, so as to produce various effects on tissues, ascending a scale in tissue damage from the electrical incision, almost identical in regard to hemostasis and rate of healing with the wound of a scalpel, through grades of dehydration (or desiccation, to employ the term introduced by Clark [1]), combined with incision, finally reaching the effect of coagulation.

In all these surgical currents the sharp-pointed, active electrode is cold when applied to the tissues. The solution of continuity and desiccating or coagulating effect is due to the generation of ohmic heat by the current in passing into the tissues.

EFFECT OF HIGH FREQUENCY CUTTING CURRENTS ON TISSUES

For the purpose of description of the histologic effects of these currents on tissues, the relative and roughly descriptive terms of cutting, desiccation and coagulation can be accepted. It may be said that the amount of desiccation or coagulation produced depends on the density of the current exhibited and the length

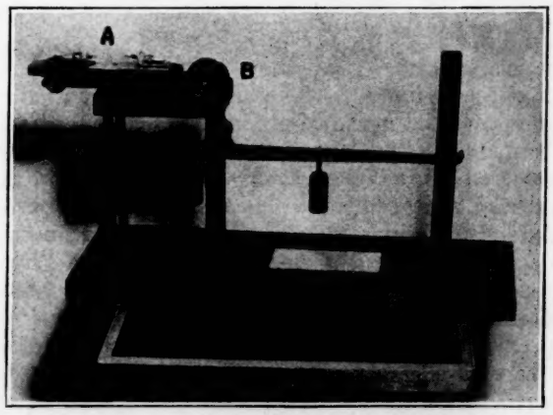

Fig. 1.—Tensiometer with arm balance devised to pull wounds apart: *A*, clamps to seize tissue: a wire cable runs over wheel *B* to arm of balance.

of time it is permitted to flow. In some currents the factor of "damping" (the amplitude of vibration being rapidly decreased) can be controlled by a series of condensers. On the degree of this "damping," to some extent, depends the desiccating or coagulating effect.

* Aided by a grant from the Council on Physical Therapy of the American Medical Association.

* From the Department of Physiology and the Department of Experimental Surgery, Northwestern University Medical School.

1. Clark, W. L.: Electrothermic Methods in the Treatment of Neoplasms and Other Lesions, in DaCosta, J. C.: Modern Surgery, ed. 9, Philadelphia, W. B. Saunders Company, 1925, p. 1468.

The use of the cutting currents with just enough desiccation to control capillary hemorrhage without resulting in coagulation and slough has made justifiable many surgical operations in easily bleeding fields that would formerly have been considered foolhardy. Examples of this are the revolutionizing of brain surgery described by Cushing;[2] partial hepatectomy and splenectomy for laceration; widespread excisions of facial cancers without subsequent slough; and

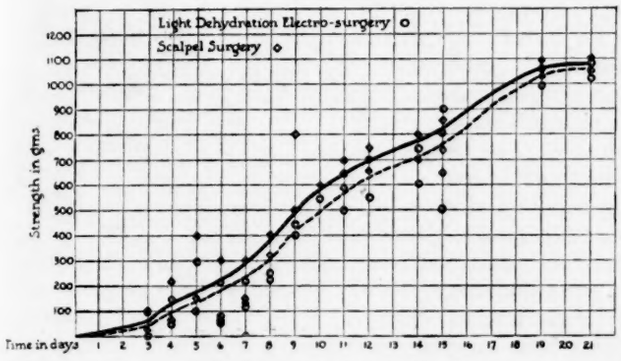

Fig. 2.—Tensile strength of wound healing in skin of dogs: the strength of healing never varies more than 100 Gm. average between the scalpel wound and the electrical wound.

operations on the jaundiced patient, who is prone to bleed freely from the incisions.

The enthusiasm for the new surgical currents has led to some quite optimistic reports regarding uniformly primary healing and rapid cicatrization of electrosurgical incisions. These are not in line with my own experience and clinical observations, and it seemed that more

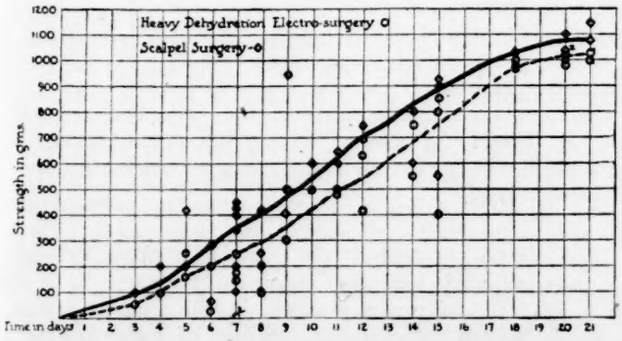

Fig. 3.—The tensile strength of wound healing in skin of dogs: The strength of healing is less when heavy dehydration (or desiccation) is applied than when slight dehydration is used, as in figure 2.

precise and scientific examination of the healing processes in these wounds should be made. This should furnish some practical criteria of the average rate of healing and comparative strength of electrical and scalpel wounds in various tissues and organs in deciding when to employ electrosurgery.

The work of Howes, Sooy and Harvey[3] on the healing of surgical incisions as determined by their tensile strength furnished a satisfactory curve of the normal expectancy of healing. The only attempts to express in curves of some mathematical precision the expectancy of wound healing prior to their work were the experiments of Carrel[4] and later of Spain and Loeb[5] and of du Noüy,[6] dealing with the rate of diminution of area of surface wounds. We determined to study the tensile strength per centimeter of length, at various time intervals, of healing incisions of skin, muscle and stomach. The experiments were performed on dogs, 120 being operated on under aseptic surgical technic, with ether as the anesthetic.

RESULTS OF EXPERIMENTS

In the skin experiments, longitudinal incisions were made on the shaved backs, parallel to the midline. Equidistant, on the opposite side, control scalpel incisions were made. The incisions were closed with subcuticular silk sutures. At the completion of the experiments the animals were killed, and sections of the wound of 1 cm. length were pulled apart with a

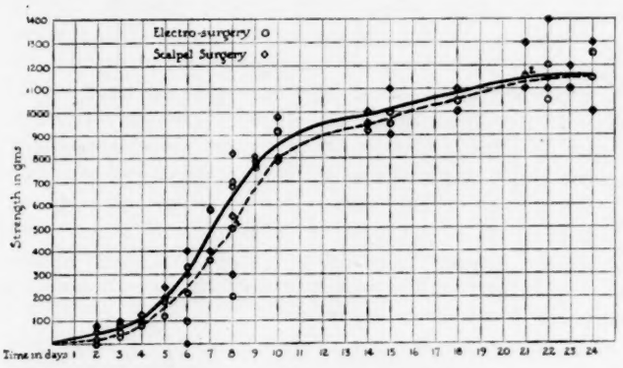

Fig. 4.—Tensile strength of wound healing in muscle: Incisions were made with very slight desiccation; the electrical incisions show almost the same strength of healing as the scalpel wounds.

balance scale devised for the purpose. The silk was removed before each section was tested.

Two types of electrical incisions were made in the skin series: one with the minimum amount of current necessary to make an incision and with sufficient "damping" to produce a slight dehydrating effect; and one with the same amount of current accompanied by a heavier dehydrating effect of approximately the type

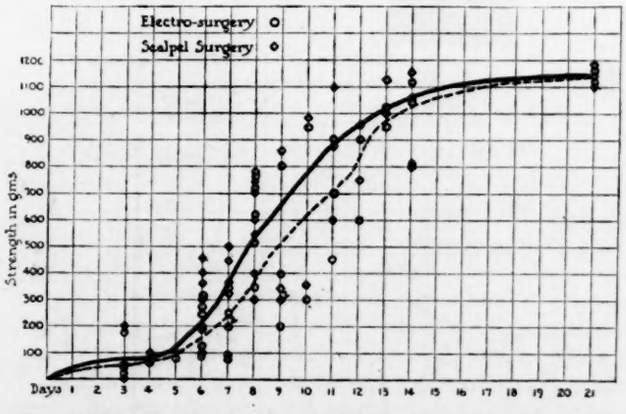

Fig. 5.—Tensile strength of wound healing in stomach: The middle values are decidedly weaker in the electrical incisions; there is a wide variation in all the readings of dogs operated on.

used in human surgery for average skin incisions. Thirty-four of each type of incisions were made.

These currents were produced by units operating from 110 volts, 60 cycle line. An earnest attempt was

2. Cushing, Harvey: Electro-Surgery as an Aid to the Removal of Intracranial Tumors, Surg. Gynec. Obst. **47**: 751-784 (Dec. 19) 1928.
3. Howes, E. L.; Sooy, J. W., and Harvey, S. C.: The Healing of Wounds as Determined by Their Tensile Strength, J. A. M. A. **92**: 42-45 (Jan. 5) 1929.
4. Carrel, Alexis: The Treatment of Wounds, J. A. M. A. **55**: 2148 (Dec. 17) 1910.
5. Spain, K. C., and Loeb, Leo: Wound Healing, J. Exper. Med. **23**: 107 (Jan.) 1916.
6. du Noüy, P. L.: General Equation for Law of Cicatrization of Wounds; Latent Period, J. Exper. Med. **34**: 339 (Oct.) 1921.

made to determine the current and power required to operate the electrosurgical knife.[7] Because of the change of capacity, the frequency and voltage varied when the cutting load was applied. No definite resonant point was recorded in the frequency meter. Therefore an accurate estimate of power was impossible.

Figure 2 presents curves showing a tensile strength of about 100 Gm. less in the middle values, the electrical incision finally approximating the strength of scalpel wound healing on the twenty-first day. This represents a fairly satisfactory wound healing, but, unfortunately, in a human being a heavier dehydration must be used in any freely bleeding field.

The results of such a current, in figure 3, show an average comparative weakness of 150 Gm. from the tenth to the fifteenth day of healing. At the twenty-first day the electrical wound is still notably weaker.

Before any conclusion can be drawn from these curves, however, the relative frequency of primary healing in these wounds must be described. Of thirty-eight wounds produced with an electrical scalpel, twenty-three, or approximately 60 per cent, showed primary union, while the remaining 40 per cent remained ununited at the twenty-second day. In an equal number of scalpel wounds produced as controls, 97.5 per cent healed by primary intention. This wide discrepancy shows the unreliability of any expectation of primary union in the electrical incisions.

The sartorius muscle in the dog has two divisions—a lateral and a medial. The medial division was chosen for the muscle experiments. It was divided transversely

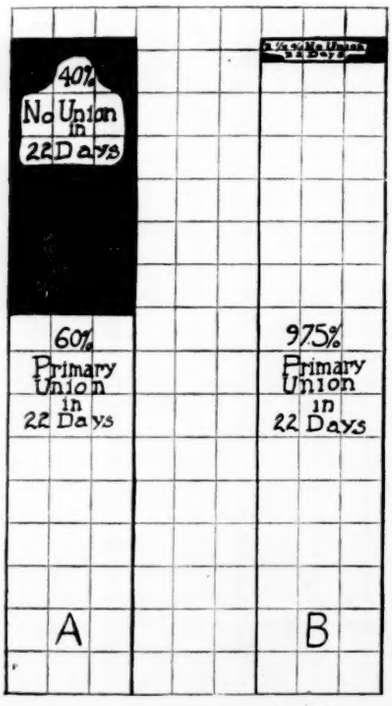

Fig. 6.—Comparison of primary unions between electrosurgical knife wounds, *A*, and scalpel control wounds, *B*.

in the middle third and repaired with a continuous suture of silver wire, number 30. This material was selected because it was found that it could be removed with less damage to the wound than silk. The smaller sizes of catgut were not found to disappear uniformly in forty-eight hours, as reported in the tensile strength experiments of Howes.[8]

In testing the strength of these wounds, a centimeter in breadth, the variation in thickness of the sartorius muscle had to be disregarded. This muscle is a ribbon-like structure of fairly uniform thickness. The curves of muscle healing show a close approximation of the strength of the electrical wounds to the scalpel wounds (fig. 4).

In the stomach wounds, a minimum of current producing a surgical incision through all coats was employed. This was of the cutting type, not producing visible dehydration. Number 30 silver wire was used to close the wounds, with a single line of sutures. Fifty-four animals were operated on. Two developed peritonitis. The wounds in the remainder were not infected on the day the dogs were killed and sections of wounds removed for study. The curve (fig. 5) shows a satisfactory speed in development of tensile strength, although the middle figures for the electrical wound lag behind the strength of the scalpel quite notably.

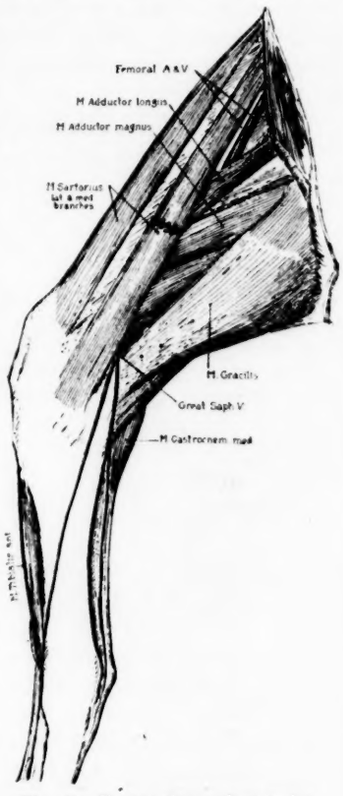

Fig. 7.—Transections of sartorius muscle, medial branch, with electrical cutting current.

Sections of these wounds in the various tissues at various stages of healing have been prepared and a histologic report on this healing will be made in a subsequent report.

SUMMARY

1. Only 60 per cent of the electrically produced skin wounds showed primary union in comparison with 97.5 per cent of primary union in the control scalpel wounds, which indicates the futility of expecting primary skin healing in a fair percentage of electrical wounds.

2. When union did occur, the wound was somewhat weaker than in corresponding scalpel wounds, and in the case of heavy dehydration did not attain a strength equal to the scalpel wound in twenty-one days.

3. The stomach and muscle incisions electrically produced show the same percentage of primary union as the scalpel wounds. The electrically produced stomach wounds are notably weaker at about the midpoint of healing. The electrically produced muscle wounds are of almost equal strength with the scalpel wounds through the entire healing period.

4. While these observations do not argue against the employment of the electrosurgical knife for making surgical incisions when clear-cut indications for its use present themselves, this method cannot be considered as a practical substitute for the scalpel for routine use.

122 South Michigan Avenue.

7. Observations by the courtesy of the experimental laboratories of the Commonwealth Edison Company of Chicago.

8. Howes, E. L.: Factors Determining the Loss of Strength of Catgut when Embedded in Tissues, J. A. M. A. **90:** 530-532 (Feb. 18) 1928.

THE THREE HORMONE TESTS FOR EARLY PREGNANCY

THEIR CLINICAL EVALUATION: A COMPARATIVE STUDY *

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AND
JACOB HOFFMAN, M.D.
PHILADELPHIA

The differential diagnosis between early pregnancy, intrauterine or ectopic, and pathologic and physiologic conditions that simulate the gravid state, frequently taxes the resources of the most expert gynecologist. Even advanced pregnancy may be confused with ovarian cysts and uterine fibroids before the fetal skeleton can be demonstrated roentgenologically.

Pulmonary tuberculosis, primary and severe secondary anemias, psychoses, endocrine and metabolic disturbances, and a host of other conditions associated with amenorrhea often mimic the gravid state. Likewise, the abnormal uterine bleeding incident to acute salpingitis is frequently attributed to ectopic gestation. The physiologic amenorrhea of lactation and the early menopause often give our patients great concern. A fairly accurate test to determine the presence or absence of pregnancy is most valuable in these cases.

There are three biologic tests for pregnancy, none of which has been given the "test of time." All of them depend on the effect of either the anterior pituitary or female sex hormone contained in the blood and urine of pregnant women on the generative organs of female white mice.

This study embraces a series of 314 cases, each of which presented, at least temporarily, a problem in diagnosis; most of them within two weeks of the first missed period. They were collected from the private practice of the authors and their colleagues, and from the wards of two hospitals. The Aschheim-Zondek, the female sex hormone, and the Siddall tests were performed simultaneously and, when one of these tests failed because of premature death of the animals, all of the three tests were later repeated or the case was not included in this report. In this series of 314 cases of suspected early pregnancy, 141 were subsequently found to be normal pregnancies and nine were proved by operation to be either unruptured ectopic gestation or tubal abortion. Our decision to operate on the women in the latter group was materially hastened in some of the seven cases that rendered positive hormone tests for pregnancy.

A brief consideration of the hormones that play an essential rôle in menstruation and reproduction is necessary to the proper understanding of these tests for pregnancy.

THE OVARIAN HORMONES

Stockard and Papanicolaou's [1] discovery of the succession of changes in cell types found in the vagina of the guinea-pig during the sexual cycle is the foundation on which Allen and Doisy [2] built the test to determine quantitatively the activity of ovarian and placental extracts. Loewe [3] and Frank [4] were thus enabled to demonstrate the presence of at least one mouse unit of female sex hormone in 40 cc. of blood in women during the premenstruum, and a steady increase of this hormone during pregnancy. Dohrn and Faure [5] then demonstrated large quantities of this hormone in the urine and feces of pregnant women.

These discoveries revealed two outstanding facts pertaining to the subject under discussion; namely, that the corpus luteum of pregnancy and later the placenta produce large quantities of female sex hormone to stimulate vascularization and growth of the uterus, and that the difference between the amount sufficient for physiologic needs and the amount produced is eliminated by the kidneys and intestines.

Another fact worth noting is the meager quantity of female sex hormone in the circulating blood during the preplacentation period of pregnancy, when growth of the uterus is relatively slow, as compared with the quantities of this hormone eliminated through the urine and feces. What is the object of nature in thus depleting the blood of female sex hormone during early pregnancy? Papanicolaou,[6] Corner and Allen [7] and others indirectly answered this question when they produced experimental proof that the corpus luteum produces also an inhibitory hormone which prepares the endometrium for nidation and gestation. Repeated injections of this lutein hormone are capable of suppressing ovulation and estrus in the guinea-pig indefinitely. It is essential, at least, during the preplacenta-

TABLE 1.—*Classification of the Pregnant Group* *

		Aschheim-Zondek Female Sex Hormone				Siddall	
	Total	Positive	Negative	Positive	Negative	Positive	Negative
Ectopic gestation; irregular bleeding and pain	9	6	3	7	2	5	4
Pregnancy complicated by fibroids	6	5	1	6	0	4	2
Pregnancy complicated by ovarian cysts	1	1	0	0	1	1	0
Failure of uterus to develop proportionately (dead fetus)	8	6	2	5	3	7	1
Uterine bleeding during early pregnancy	11	8	3	8	3	8	3
Early pregnancy in amenorrheic women	15	14	1	11	4	13	2
Early pregnancy following irradiation amenorrhea	1	0	1	1	0	1	0
Early pregnancy in unmarried	9	7	2	6	3	8	1
Acute salpingitis and early pregnancy	1	1	0	1	0	1	0
Pregnancy during early menopause	8	7	1	5	3	8	0
Early pregnancy in lactating women	3	3	0	2	1	2	1
Early pregnancy complicated by psychosis	1	0	1	1	0	0	1
Normal women within week of first missed period	20	12	8	15	5	12	8
Normal women second week of first missed period	31	18	13	22	9	25	6
Third week of first missed period	20	16	4	17	3	17	3
Cyclic bleeding during pregnancy	2	1	1	2	0	1	1
Exophthalmic goiter and early pregnancy	2	2	0	1	1	1	1
Pregnancy in very obese	2	2	0	2	0	2	0
Total	150	109	41	112	38	116	34

* All of these presented a temporary problem in diagnosis.

* From the department of gynecology of Mount Sinai Hospital.
* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-First Annual Session of the American Medical Association, Detroit, June 25, 1930.

1. Stockard, C. N., and Papanicolaou, G. N.: The Existence of a Typical Oestrous Cycle in the Guinea-Pig, with a Study of Its Biological and Physiological Changes, Am. J. Anat. **22**: 225 (Sept.) 1917.
2. Allen, Edgar; and Doisy, E. A.: An Ovarian Hormone: Preliminary Report on Its Localization, Extraction and Partial Purification, and Action in Test Animals, J. A. M. A. **81**: 819 (Sept. 8) 1923.
3. Loewe, S.: Nachweis brunsterzeugender Stoffe im weiblichen Blute, Klin. Wchnschr. **4**: 1407 (July 16) 1925.
4. Frank, R. T.; Frank, Marie-Louise; Gustavson, R. G., and Weyerts, W. W.: Demonstration of Female Sex Hormone in the Circulating Blood: A Preliminary Report, J. A. M. A. **85**: 510 (Aug. 15) 1925.
5. Dohrn, M., and Faure, W.: Ueber die Ausscheiding des weiblichen Sexualhormons, Klin. Wchnschr. **7**: 943 (May 13) 1928.
6. Papanicolaou, G. N.: A Specific Inhibitory Hormone of the Corpus Luteum, J. A. M. A. **86**: 1422 (May 8) 1926.
7. Corner, G. W., and Allen, W. M.: Physiology of the Corpus Luteum: II. Production of a Special Uterine Reaction (Progestational Proliferation) by Extracts of the Corpus Luteum, Am. J. Physiol. **88**: 326 (March) 1929.

tion period of pregnancy, when its removal is usually followed by abortion.

Female sex hormone is the antithesis of the lutein or inhibitory hormone in that it produces estrus in the castrated rodent and even abortion in the pregnant rat and guinea-pig.[8] It is therefore logical to assume that the elimination of large quantities of female sex hormone by the kidneys and bowel, at least during early pregnancy, is for the purpose of maintaining the physiologic balance between these two hormones.

Frank and Goldberger[9] recovered a demonstrable quantity of female sex hormone in 250 cc. of the urine of women suffering from amenorrhea and functional sterility but failed to find a demonstrable quantity of the hormone in 40 cc. of their blood. These investigators suggest that the low renal threshold for female sex hormone is the responsible factor in the causation of amenorrhea and functional sterility in regularly menstruating women. It seems more logical to assume that the failure of the genital tract to utilize the female sex hormone present in the circulating blood results in its elimination.

In the light of our present knowledge, the lutein or inhibitory hormone is responsible for the secretory stage of the endometrium, and its absence through failure of luteinization results in amenorrhea or pseudomenstruation. By the latter term is meant cyclic uterine bleeding without the presence of a premenstrual endometrium and corpus luteum. Corner,[10] and Hartman[11] have demonstrated its existence in the monkey. In the human being its existence may be suspected in view of the fact that some regularly menstruating sterile women show no evidence of a premenstrual endometrium when curetted a few days before the onset of the flow.[12]

THE SEX-MATURATION HORMONE OF THE ANTERIOR PITUITARY GLAND

Independently and almost simultaneously, Zondek and Aschheim,[13] and Smith and Engle[14] showed that transplants of the anterior lobe of the pituitary body into immature white mice and rats produce remarkable changes in the ovaries. Within three or four days there is evidence of maturation and rupture of follicles and luteinization. The female sex hormone, elaborated by the matured ovaries, simultaneously produces estrus in these animals, as evidenced by the vaginal smear. Moreover, one of us (J. H.[15]) and later Steinach and Kun[16] have shown that transplantation of anterior hypophyseal tissue into old and sexually stagnant mice that had not shown an estrous period for many months reactivated the sexual apparatus of these animals. One ovary was removed as a control before transplantation; the remaining ovary, within a period of four days, almost invariably showed enormous enlargement with matured graafian follicles and corpora lutea. Animals thus sexually reactivated continued the cyclic changes, as shown by the daily vaginal smear, for some time, if the remaining ovary was not removed. The test for anterior pituitary hormone, therefore, consists in the induction of ovulation in immature white mice with secondary developmental changes in the lower genital tract, the latter being due to the ovarian hormone elaborated by the matured graafian follicles and corpora lutea. While the injection of folliculin can produce estrus in infantile and sexually stagnant mice, the ovaries of the animals thus treated remain unchanged.

It is well known that both during pregnancy and following experimental castration the anterior pituitary gland undergoes marked hypertrophy.[17] Trivino[18] observed marked hypertrophy of the genital tract in immature white mice treated with the serum of pregnant women. Later, Fluhmann[19] showed that in 25 per cent this reaction is due solely to female sex hormone (Allen and Doisy test) and that in 75 per cent the reaction is due chiefly to the primary influence of the anterior pituitary hormone, as evidenced by the developmental changes in the ovaries of the mice. Moreover, he[20] demonstrated anterior pituitary hormone in the blood of twelve of nineteen patients who had had a previous bilateral oophorectomy; in four of five patients who had had castration by irradiation; in six of seventeen women suffering from functional amenorrhea, and in four of five women complaining of irregularities of the menstrual cycle. This increase of pituitary hormone in the blood of women with ovarian deficiency is often evident in their urine, and renders a considerable percentage of false positive reactions with the Aschheim-Zondek urine test for pregnancy.

ASCHHEIM-ZONDEK TEST

The Aschheim-Zondek test depends on the presence of a demonstrable quantity of anterior pituitary hormone in the whole urine of pregnant women.

Five immature white mice, weighing no more than 8 Gm., receive six injections of morning urine in the course of two days. The total quantity of urine employed in treating each of the five animals varies from 1.2 cc. to 2.4 cc. Four days following the first injection, the ovaries are removed and inspected with the aid of a hand lens. The presence of hemorrhagic spots and yellowish protrusions, which are due to hemorrhage into the follicle and corpora lutea, respectively, is indicative of a positive reaction. This, however, should be verified by microscopic examination of serial sections of the ovaries.

The ovarian response to the anterior pituitary hormone contained in the urine, in our experience, invariably produces estrus with some enlargement of the uterus of the mouse. Frequently (in twelve of forty-one negative Aschheim-Zondek reactions in pregnant women) we observed estrus in the treated animals without any developmental changes in the ovaries. This reaction in the lower genital tract was due solely to the presence of a demonstrable quantity of female sex hormone in the specimen of whole urine.

8. Parkes, A. S., and Bellerby, C. W.: Studies on the Internal Secretions of the Ovary: II. The Effects of Injection of the Oestrus-Producing Hormone During Pregnancy, J. Physiol. **62:** 145 (Dec.) 1926.
9. Frank, R. T., and Goldberger, M. A.: The Female Sex Hormone: Utilization of the Hormone in the Normal Woman: Effect of Abnormal Kidney Permeability in the Production of Amenorrhea and Sterility, J. A. M. A. **94:** 1197 (April 19) 1930.
10. Corner, G. W.: The Relation Between Menstruation and Ovulation in the Monkey, J. A. M. A. **89:** 1838 (Nov. 26) 1927.
11. Hartman, C. G.: The Corpus Luteum and the Menstrual Cycle Together with the Correlation Between Menstruation and Implantation, Am. J. Obst. & Gynec. **19:** 511 (April) 1930.
12. Mazer, C., and Hoffman, J.: Female Sterility, M. J. & Rec. **129:** 90 (Jan. 16) 1929.
13. Zondek, Bernhard; and Aschheim, S.: Das Hormon des Hypophysenvorderlappens: I. Testobjekt zum Nachweis des Hormons, Klin. Wchnschr. **6:** 248 (Feb. 5) 1927.
14. Smith, P. E., and Engle, E. T.: Experimental Evidence Regarding the Rôle of the Anterior Pituitary in the Development and Regulation of the Genital System, Am. J. Anat. **40:** 159 (Nov. 15) 1927.
15. Reported by Zondek, Bernhard; and Aschheim, S.: Hypophysenvorderlappen und Ovarium: Beziehungen der endokrinen Drüsen zur Ovarialfunktion, Arch. f. Gynäk. **130:** 1, 1927.
16. Steinach, E., and Kun, H.: Die entwicklungsmechanische Bedeutung der Hypophyse als Aktivator der Keimdrüseninkretion, Med. Klin. **24:** 524, 1928.
17. Rossle, R.: Das Verhalten der Menschlichen Hypophysie nach Kastration, Virchows Arch. f. path. Anat. **216:** 248 (May 14) 1914.
18. Trivino, F. G.: Ueber Wachstumsteigerung des Uterus durch Gravidenserum, Klin. Wchnschr. **5:** 2022 (Oct. 22) 1926.
19. Fluhmann, C. F.: Anterior Pituitary Hormone in the Blood During Pregnancy, J. A. M. A. **92:** 1744 (May 25) 1929.
20. Fluhmann, C. F.: Anterior Pituitary Hormone in the Blood of Women with Ovarian Deficiency, J. A. M. A. **93:** 672 (Aug. 31) 1929.

Of the 150 women who subsequently proved to be pregnant, only 109 (73 per cent) showed a positive reaction to the Aschheim-Zondek test.

Numerous European investigators [21] found this test correct in 98 per cent. Brouha and his co-workers,[22] however, found the Aschheim-Zondek test subject to a 40 per cent element of error and, therefore, modified the test by employing male instead of female mice.

The comparatively low percentage of positive reactions with the Aschheim-Zondek test herein reported may be due to the fact that nearly all of the 150 women were in very early pregnancy (table 1) long before there was any palpatory evidence of the gravid state. It may also partly be due to the fact that we employed either two or three animals instead of the five prescribed by Aschheim and Zondek.

The most disturbing element, however, is our finding of a positive reaction in 16 of 164 nonpregnant women suffering from various conditions simulating the gravid state. The false positive reactions (table 2) were obtained in 5 of 25 women entering the menopause; in 7 of 38 women with ovarian hypofunction; in 1 of 5 with ovarian cysts; in 1 of 8 with uterine fibroids; in 1 of 11 cases of salpingitis with irregular bleeding, and in 1 of 2 mental cases associated with amenorrhea.

TABLE 2.—*Nonpregnant Group* *

	Total	Aschheim-Zondek		Female Sex Hormone		Siddall	
		Positive	Negative	Positive	Negative	Positive	Negative
Early menopause	25	5	20	3	22	8	17
Amenorrhea (ovarian hypofunction)	38	7	31	3	35	14	24
Ovarian cysts associated with amenorrhea	5	1	4	0	5	2	3
Uterine fibroids simulating pregnancy	8	1	7	0	8	0	8
Salpingitis with symptoms suggestive of ectopic pregnancy	11	1	10	0	11	0	11
Psychosis associated with amenorrhea	2	1	1	0	2	0	2
Lactation amenorrhea	7	0	7	0	7	2	5
Regularly menstruating women	6	0	6	0	6	0	6
Missed period in the course of an acute infection	6	0	6	0	6	0	6
Amenorrhea due to exophthalmic goiter	4	0	4	0	4	0	4
Missed period after rape	1	0	1	0	1	0	1
Metrorrhagia	7	0	7	0	7	0	7
Somewhat delayed period	14	0	14	0	14	0	14
Radium castration	6	0	6	0	6	2	4
Unclassified	24	0	24	0	24	0	24
Total	164	16	148	6	158	28	136

* All of these presented one or more symptoms of pregnancy.

THE FEMALE SEX HORMONE TEST

The female sex hormone test depends on the demonstration of a mouse unit of female sex hormone in 10 cc. of whole urine by the Allen and Doisy method. In two previous communications,[23] the technic employed in performing this test was fully described. For the sake of emphasis, we shall touch on a few important points.

By increasing the number of injections from five to six, we have lately obtained a much higher percentage of positive reactions than herein reported. The total quantity of urine injected into each of the two or three castrated white mice in the course of two days is 10 cc. in five divided doses. The specimen of urine must be kept on ice constantly to prevent bacterial growth and useless death of animals.

Much depends on the correct interpretation of the vaginal spread. Mild reactions must be disregarded because the urine of nonpregnant women, and even that of males, contains small quantities of female sex hormone, rarely sufficient to give a positive reaction when 10 cc. of whole urine is employed. A preponderance of non-nucleated epithelial cells and the absence of leukocytes and mucus are indicative of a positive reaction. One is often inclined to disregard the presence of some leukocytes in the spread. It is hazardous to interpret such a spread as a positive reaction for pregnancy. The platinum loop, if unskilfully handled, may carry some non-nucleated squamous epithelial cells from the vulva and thus convey the impression that these cells are derived from the vagina. An abrupt transition from diestrus to estrus in one of the test animals should therefore be viewed with suspicion and corroborated by another spread. A delayed reaction (sixth or seventh day of the first injection) is equally unreliable. Vaginal spreads taken from very ill animals are misleading, because of dehydration of the vaginal mucosa. Urine of women who have recently received ovarian therapy may render a false positive reaction.

This test is easy to perform and is inexpensive. It takes no more than five minutes to castrate a mouse by the dorsal approach. The mortality incident to castration is practically nil. The death rate of the animals incident to the injections of urine is approximately 10 per cent. The animals will endure five or six series of injections.

In the group of 150 women who subsequently proved to be pregnant, 112 (75 per cent) yielded a positive reaction. Of the 164 women who subsequently proved not to be pregnant, 3 of 25 women entering the menopause and 3 of 38 suffering from endocrine imbalance rendered false positive reactions—an incidence of less than 4 per cent.

THE SIDDALL TEST

The Siddall test depends on the effect of anterior pituitary hormone and, to a lesser degree, of the female sex hormone contained in the blood serum of pregnant women on the genital tract of immature mice.

One cc. of blood serum is injected daily. At the end of five days the total mouse weight divided by the weight of the uterus with the ovaries attached gives a ratio of 400 or less, if the woman is pregnant.

Contrary to the observations of Siddall,[24] we invariably found, in the positive cases, marked development of the ovaries of the mouse with corpora lutea and hemorrhage into the follicles, showing that the anterior pituitary hormone contained in the blood is in no small degree indirectly responsible for the enlargement of the uteri of the test animals. The female sex hormone generated by the activated ovaries of the mouse, augmented by the female sex hormone contained in the women's blood serum, are the responsible factors in enlarging the uterus of the test animal.

This test rendered a positive reaction in 116 (76 per cent) of the 150 pregnant women studied in this series.

21. Aschheim, S., and Zondek, Bernhard: Die Schwangerschaftsdiagnose aus dem Harn durch Nachweis des Hypophysenvorderlappenhormons, Klin. Wchnschr. **7**: 1401, 1928. Erhhardt, K.: Beitrag zur Hypophysenvorderlappen: Reaktion inter Besonderer Berüchtsictigung der Aschheim-Zondekschen Schwangerschaftreaktion, Klin. Wchnschr. **8**: 2044, 1929. Solms, E., and Klopstock, E.: Die Aschheim-Zondeksche Reaktion und ihre differential diagnostische Bedeutung für Amenorrhoe und Klimakterium, Deutsche med. Wchnschr. **55**: 1919, 1929.

22. Brouha, L.; Hinglais, H., and Simonnet, H.: Biologic Diagnosis of Pregnancy, Paris méd. **1**: 221-236 (March 8) 1930.

23. Mazer, Charles; and Hoffman, Jacob: The Diagnosis of Early Pregnancy Through the Detection of Female Sex Hormone in the Urine, Am. J. Obst. & Gynec. **17**: 186 (Feb.) 1929; On the Occurrence of Ovarian and Anterior Pituitary Hormones in the Urine of Pregnant Women, ibid. **18**: 48 (July) 1929.

24. Siddall, A. C.: The Hormone Test for Pregnancy, J. A. M. A. **91**: 779 (Sept. 15) 1928.

This low percentage of positive reactions is probably due to the fact that none but problem cases are included in this series. Twenty-eight (17 per cent) of the 164 women who subsequently proved not to be pregnant rendered a positive reaction (table 2). The false positive reactions were found in 14 of 38 patients with ovarian hypofunction; in 8 of 25 patients entering the menopause; in 2 of 5 women with ovarian cysts; in 2 of 6 women who had had radium castration, and in 2 of 7 lactating women. The enlargement of the uteri of the mice in these twenty-eight tests was invariably accompanied by marked developmental changes in the ovaries, thus corroborating Fluhmann's [20] finding of anterior pituitary hormone in the blood of some women with ovarian deficiency.

The combined tests were simultaneously positive (i. e., all three in accord) in seventy-eight, and negative in seventeen of the pregnant group. Seven of eight pregnant woman, in whom death of the fetus was suspected and later corroborated, rendered one or more positive hormone tests. It is apparent that, as long as the placenta has some vascular contact with the uterus, the production of hormone continues. In some cases the test for pregnancy remained positive for a week following evacuation of the uterus.

TABLE 3.—*Comparison of Positive and Negative Reactions in the Three Tests*

	Female Sex Hormone		Aschheim-Zondek		Siddall Test	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Correct positives.....	112	75	109	73	116	76
False positives.....	6	4	16	10	28	17
Correct negatives.....	158	96	148	90	136	82
Wrong negatives.....	38	25	41	27	34	24
Total cases.....	314		314		314	

We encountered nine cases of ectopic gestation in which the case histories, in relation to the hormone tests, were especially interesting. The combined tests were positive in five and negative in two; in the remaining two, the female sex hormone test alone was positive.

SUMMARY AND CONCLUSIONS

The hormone tests for pregnancy are of distinct clinical value in the differential diagnosis between early pregnancy, normal or ectopic, and pathologic conditions associated with amenorrhea or irregular uterine bleeding.

The female sex hormone test is the more reliable when positive in that the proportion of error in nonpregnant women is less than 4 per cent. A rigid interpretation of the vaginal spreads and the elimination of abrupt and delayed reactions reduce this element of error considerably.

The inability of the genital tract to utilize the small quantity of female sex hormone present in the circulating blood in women with ovarian deficiency results in its elimination by the kidneys; hence the occasional false positive reaction by the female sex hormone test in these cases.

The compensatory pituitary hyperfunction accompanying ovarian deficiency is responsible for the comparatively large number of false positive reactions in the Aschheim-Zondek and Siddall tests.

The tests performed individually render a positive reaction in about 75 per cent of early pregnancies; when combined, the percentage of positives is increased to 90, by virtue of one of the three tests showing a positive reaction.

A negative finding does not exclude the possibility of pregnancy; repeated negative reactions are fairly reliable.

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ABSTRACT OF DISCUSSION

DR. H. B. VAN DYKE, Chicago: Certain facts in the literature may serve to explain not only the presence of negative results in some cases but also the presence of false positive results. In the first place, when the tests are made with the so-called female sex hormone, I think it should be clearly realized that such rodents as the mouse and the rat vary considerably in their susceptibility to this hormone. This statement is based primarily on the work of Coward and Burn. Although the results obtained by these workers have been criticized, they have been confirmed by British investigators and by Gustavson in this country. It is easily possible, should one use a small number of animals, that he obtain a negative result simply because the animal group is one of low susceptibility toward the hormone. We have no idea of the accuracy with which we can quantitatively determine a substance causing precocious sexual maturity. The variation probably is greater than it is in the case of estrin because the phenomena induced are more complex and more indirect. Moreover, in assaying such a substance, one should clearly bear in mind that the ages commonly given as those at which rodents become sexually mature probably vary considerably depending on diet and other factors. Long and Evans, for instance, point out that the average age of sexual maturity for their groups of rats was about 76 days; however, we have found that rats of our colony frequently become sexually mature when only 29 days old. I should also think that the tests made with urine should be more accurate than tests made by the Siddall technic, since urinary material would more likely be free from substances that might cause false reactions. I believe that the data which Drs. Mazer and Hoffman presented support such a view.

DR. DANIEL LONGAKER, Philadelphia: This paper presents results that seem of immense interest. About two decades ago, Abderhalden, using blood serum in early pregnancy, obtained positive results in diagnosis in about 100 per cent. Others here and in Europe did not confirm his results. An afternoon spent with Abderhalden at Halle convinced me that he was right and that the rest were wrong. I want to express my obligation to Drs. Mazer and Hoffman for the numerous instances in which they and their laboratory have enabled us to make a positive diagnosis of early pregnancy in the hitherto sterile woman, in the woman of lowered fertility, especially the married woman often in the third decade of life, who tips the beam at from 250 to 300 pounds (113 to 136 Kg.) or over, often menstruating irregularly with periods of amenorrhea which often mean nothing, as a suggestion of possible pregnancy, but, sometime something happens and then she may fool the very elect. One or all of these tests, however, may help to lessen this period of uncertainty by the establishment of a positive earlier diagnosis. Discussion of the female sex hormone is entirely too broad a field to be more than hinted at, especially by one who knows nothing about it. It has been isolated in crystalline form from the urine of pregnancy by the process of Doisy and is soon to be a regular product of the manufacturing chemist. It is not too far fetched a conclusion to suggest an analogy: The first, what insulin is to the individual, the female sex hormone is to the continuity of all animal life. Without insulin, the individual perishes. Without this hormone, animal life ceases to be propagated. Another analogy: The enormous waste of female sex hormone in the urine and feces of early pregnancy illustrates the same profligacy of nature seen in the supply of a billion spermatozoa when but one is needed. The urine of the male may contain a small amount of the particular hormone. Is not this in line with modern teaching? It is all a matter of relativity. This paper suggests vistas of progress, more intelligent application of all efficient diagnostic agents and resultful and far more satisfactory therapeusis than could possibly have been dreamed of even in the recent past.

DR. ALFONS BACON, Chicago: The one test that should really be considered a test for early pregnancy is the Aschheim-Zondek test for the anterior lobe hormone. I think it is pretty well demonstrated that the female sex hormone increases in the blood and urine much later, toward the middle of pregnancy, in fact, than the anterior lobe hormone. It is this anterior lobe hormone which activates the genitals, the ovaries, and produces the changes which have been described here. I think I have to agree with Dr. Van Dyke that this so-called anterior lobe hormone on which the test is based is not exactly the same thing as is contained in the gland itself. I showed last year that the great increase seems to have no relation to the changes of the activity of the implants. In other words, implanting pieces of anterior lobe of the hypophysis in the infantile mice produced actually weaker reactions or took larger implants to produce the results than one would have expected with the increase of the hormone in the blood and urine itself.

DR. CHARLES MAZER, Philadelphia: Not until the hormones of the anterior pituitary lobe are chemically isolated will it be possible to identify the hormone present in the urine of pregnant women. Engle directed attention to the great difference in the ovarian reaction between implants and urine injections. We set out to experiment by subjecting infantile mice to three consecutive implantations instead of one, and found that the ovaries of these animals showed hyperluteinization similar to the reaction obtained by urine injections, indicating that overstimulation produces hyperluteinization. As to the relative value of the Aschheim-Zondek and female sex hormone tests, we have shown that the latter renders a smaller percentage of false positives.

ACUTE BENIGN INFECTIOUS MYELITIS*

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During the World War, and in the following decade, there appeared in the literature reports of cases of infections of the cerebrospinal nervous system, with quite a related symptomatology. While the brunt of the infection seemed to have been borne by the cord, roots and peripheral nerves, the rest of the nervous system was not spared. The disease was ushered in by an upper respiratory or general systemic infection, with pain in the chest, back, abdomen and extremities, radicular in its distribution. Presently there developed paresis in one or more of the lower extremities, resulting in flaccid paraplegia and even in quadriplegia. Occasionally the paralysis was of an ascending nature, with medullary involvement resulting in death. There occurred marked reduction and even abolition of the deep tendon reflexes. There was also disturbance in the control of the sphincters. There were subjective as well as objective sensory disorders, both deep as well as superficial. The cerebrospinal fluid showed increase in protein and relatively little cellular reaction. Many patients recovered without any residual disorders. In this respect these patients differed from those who had had attacks of myelitis [1] or neuritis caused by known bacteria or their toxins such as typhoid, influenza, diphtheria, streptococci, staphylococci, gonococci, syphilis and tuberculosis. As a rule myelitis caused by these organisms and their toxins,[2] if not followed by death, usually results in a chronic and prolonged illness and the patients become chronic invalids. The sensory and motor disturbances in these patients invariably remain. Neuritis caused by these bacteria and their toxins also results in prolonged illness and commonly is followed by permanent physical symptoms.

Because of the unusual symptomatology of the cases reported during and after the war, a review of the literature seems opportune. Gordon Holmes [3] and Bradford, Bashford and Wilson [4] were among the first to report these cases. The disease was ushered in with fever, headache, vomiting, pain in the back and often a sore throat. In a few days there developed widespread paralysis affecting more especially the large muscles of the limbs and trunk. There was numbness, tingling and pain in the extremities, with loss of the deep tendon reflexes. Apparently "there was a diffuse affection of the nervous system affecting the spinal cord, spinal ganglia and peripheral nerves, with but a slight incidence on the cortex." [4] In the series reported by Bradford and his co-workers there were eight deaths in thirty cases. These observers concluded that they had been dealing with a septicemia or systemic poisoning that entered the central nervous system by the way of the nerve trunks, both motor and sensory, and probably of an infective nature. Casamajor [5] saw four or five such cases during the war and reported two that he had studied histologically. He concluded that the portal of entry of the infection had been by the blood or lymph channels rather than along the nerves. Under the descriptive term of "infective neuronitis," Kennedy [6] reported a similar group of cases. Guillain, Barre and Strohl [7] reported a similar group of cases, all of which eventually resulted in complete recovery. These patients suffered from what they described as a distinct syndrome characterized by motor weakness, abolition of the tendon reflexes with preservation of cutaneous reflexes, with paresthesias, mild difficulty in objective sensibilities, pain on pressure of deep muscles, and increase in albumin and absence of cellular reaction in the spinal fluid. They concluded that the pathologic condition depended on the concomitant involvement of the spinal roots, nerves and muscles, truly resembling an infectious or toxic nature. Francois, Zuccoli and Montus [8] added an observation of their own to this syndrome with the exception that there was bilateral facial involvement in their case. In the meantime the protean nature of epidemic encephalitis began to manifest itself. Bassoe [9] and Barker [10] in this country, Sharnke and Moog [11] and Margulis [12] in Germany, and Beriel and Devic [13] in France called attention to the involvement of the cord, roots and peripheral nerves in cases of apparent epidemic encephalitis. The German and French observers regarded these cases as polyneuritic or myeloradiculoneuritic types of epidemic

* Read before the Section on Nervous and Mental Diseases at the Eighty-First Annual Session of the American Medical Association, Detroit, June 25, 1930.

1. Dieulafoy, Georges: A Text-Book of Medicine, New York, D. Appleton & Co. **2**: 1291, 1912.
2. Osler, William; and Macrae, Thomas: The Principles and Practice of Medicine, New York, D. Appleton & Co., New York, 1926, p. 978.
3. Holmes, Gordon: Acute Febrile Polyneuritis, Brit. M. J. **2**: 37 (July 14) 1917.
4. Bradford, J. R.; Bashford, E. F., and Wilson, J. A.: Acute Infective Polyneuritis, Quart. J. Med. **12**: 89 (Oct.) 1918.
5. Casamajor, Louis: Acute Ascending Paralysis Among Troops, Arch. Neurol. & Psychiat. **2**: 605 (Dec.) 1919.
6. Kennedy, Foster: Infective Neuronitis, Arch. Neurol. & Psychiat. **2**: 621 (Dec.) 1919.
7. Guillain, G.; Barre, J. H., and Strohl, A.: Sur un syndrome de radiculonevrite avec hyperalbuminose du liquide cephalo-rachidien sans reaction cellulaire, Bull. et mém. Soc. méd. d. hôp. de Paris **40**: 1462 (Oct.) 1916.
8. Francois; Zuccoli, and Montus: Sur en cas de polyradiculo-nevrite curable avec dissacociation albumino-cytolique, Rev. neurol **36**: 95 (Jan.) 1929.
9. Bassoe, Peter: The Delirious and the Meningoradicular Types of Epidemic Encephalitis, J. A. M. A. **74**: 1009 (April 10) 1920.
10. Barker, L. F.; Cross, E. S., and Irwin, S. V.: Meningo-Encephalo-Myelo-Neuritis, Am. J. M. Sc. **159**: 157 (Feb.) 1920.
11. Sharnke and Moog: Zur Beziehungen zwischen Neuritis und Encephalitis Epidemica, Ztschr. f. d. ges. Neurol. u. Psychiat. **90**: 89, 1924.
12. Margulis, S. M.: Myelo-Radiculo-Polyneuritiden bei epidemische Encephalitis, Deutsche Ztschr. f. Nervenh. **89**: 262, 1926.
13. Beriel, L., and Devic, A.: Les formes périphériques de l'encéphalite épidémique, Presse méd. **33**: 1441 (Oct. 31) 1925.

encephalitis. Recently Strauss and Rabiner [14] reported seven cases under the heading of myeloradiculitis. Their patients presented an acute involvement of the posterior nerve roots and the spinal cord, manifested by radicular symptoms, paresis of the extremities to fully developed paraplegia, with rapid improvement and complete recovery in an incredibly short time. Their cases were observed in the spring of 1926, and they gave a history of a preceding inflammation of the upper respiratory tract.

Since inflammation of the spinal cord carries with it an unfavorable prognosis, it is well worth while calling the attention of the profession to a type of inflammatory cord disease from which the patients fully recover, as pointed out by Strauss and Rabiner. I therefore add the following four cases that have come under my observation:

REPORT OF CASES

CASE 1.—R. S., a white girl, aged 15, was admitted to the Brooklyn Jewish Hospital, Oct. 17, 1924, complaining of inability to walk for four days. October 13, while reading a book, she experienced a throbbing pain in the left side of the lower part of the abdomen. She then felt as if both feet were falling asleep. This was immediately followed by a pricking feeling as of pins and needles slowly creeping from her toes to her hips. Half an hour later she tried to stand up but her legs would not support her. A physician was called, who found that she had a sore throat and paralysis of the lower extremities. On examination in the hospital there was found loss of motor power in both lower extremities and in the lower muscles of the back, so that the patient could not sit up unsupported. The knee jerks and ankle jerks were absent; Babinski's sign was present on the left side. The abdominal reflexes were absent. There was a zone of hyperesthesia, hyperalgesia and hyperthermesthesia at the ninth dorsal cord segment. There was loss of sensibility of the muscle joint and preservation of vibratory sensibility in the lower extremities. The cranial

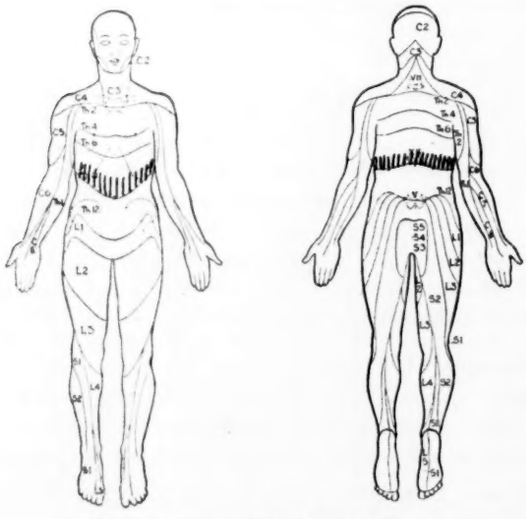

Fig. 1.—Sensory disturbances in case 1.

nerves were intact. The pupils reacted promptly, and the eyegrounds were normal. The temperature was 99.6 F.; pulse, 104; respiration, 24. The urine was normal. Blood count showed white blood cells 9,400, with 72 per cent polymorphonuclears. The patient complained of pain in the small of the back and in the extremities, and of inability to void urine. The spinal fluid came out under slightly increased pressure, was clear and showed 7 lymphocytes and a 2 mm. albumin ring; a test for globulin was negative; Fehling's test was positive. Blood and spinal fluid Wassermann tests were negative. The Queckenstedt sign was negative. October 24, examination showed bilateral inexhaustible ankle clonus. Babinski's and Oppenheim's signs were positive on the left side. The knee jerks at that time were decidedly increased. There was a zone hyperesthesia at the ninth dorsal segment. The abdominal reflexes were absent. There was still difficulty in urination and the patient had to be catheterized. She continued to show improvement, and on October 25 she was able to sit up unsupported. She also was able to void voluntarily. November 25, she was able to walk about, dragging her left foot. At that time the abdominal reflexes were absent, a Babinski's sign was present on the left side, and there was a left ankle clonus. There was no sensory disturbance found. Roentgen examina-

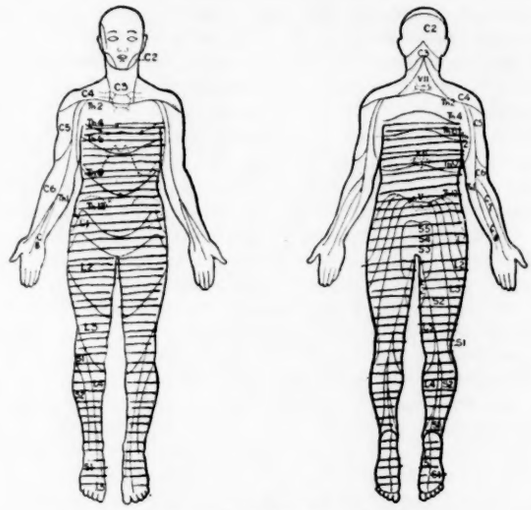

Fig. 2.—Sensory disturbances in case 2.

tions of the dorsal, lumbar and sacral regions of the spinal column did not show any evidence of pathologic changes. The patient continued to improve and was discharged from the hospital, Nov. 28, 1924. She was reexamined, Feb. 21, 1925, and again in June, 1925. She then complained of pain at the ninth dorsal cord segment distribution. There were no objective sensory or motor disturbances, but there was a definite increase in both knee jerks. The patient has since returned to school and has received a college education. She participated in all the athletic activities and has had no complaints whatever.

CASE 2.—H. F., a white man, aged 21, a clerk, was admitted to the Brooklyn Jewish Hospital, Aug. 11, 1926, complaining of headache, pain in the back and extremities, inability to void the urine and inability to walk. August 3, he had had frontal headache and a moderate fever, which was diagnosed by the family physician as grip. August 5, he was unable to void, and had to be catheterized. August 7, he felt much better and returned to work. That same afternoon he again had a headache, felt weak, and experienced a sharp shooting pain in the back of the neck radiating to the toes. The following day he was unable to raise his lower extremities. On admission there was definite paresis of the lower extremities, the patient being unable to flex the thighs or legs. There was no evidence of any cranial nerve involvement other than slight haziness of the margins of the disks. The right knee jerk and the right ankle jerk were absent. The left knee jerk was 2 plus, and the left ankle jerk 1 plus. The abdominal and cremasteric reflexes were absent. There was loss of pain and temperature sensations and diminution of tactile sensation below the fifth dorsal cord segment. Muscle joint and vibratory sensibilities were intact. There was moderate tenderness on pressure of the deep muscles of the lower half of the back and of the lower extremities. The temperature was 101.2 F.; the pulse was 96; respiration, 26. There was slight congestion of the pharynx. The spinal fluid came out under increased pressure, and had 110 lymphocytes, a 2 mm. albumin ring, 2 plus globulin, 40 mg. of sugar per hundred cubic centimeters, and a negative Wassermann reaction. The blood Wassermann reaction was negative. The urine had a very faint trace of albumin. A blood count showed white blood cells numbering 10,400, with 79 per cent polymorphonuclears. The Queckenstedt sign was negative. The patient had to be catheterized. For about

14. Strauss, Israel; and Rabiner, A. M.: Myeloradiculitis, Arch. Neurol. & Psychiat. 23: 240 (Feb.) 1930.

a week after his admission there was no particular change in his condition other than a gradual return of the temperature to normal. August 28, he began to void voluntarily. There was a gradual return of power in the lower extremities, with hyperreflexia and a bilateral Babinski reflex. There was a zone of hyperalgesia between the fifth and seventh dorsal cord segments. His condition continued to improve and he was finally discharged, Sept. 11, 1925. I saw him again, June 7, 1927. At that time he had excellent power in both lower extremities. There was a bilateral Babinski reflex and an exhaustible right ankle clonus. His only complaint at that time was constipation. I examined him again, Sept. 10, 1929. He complained of constipation, the bowels moving only once in four or five days. He also occasionally experienced a creeping girdle pain in the small of the back and the lower extremities. He said he was able to work as a shipping clerk and was able to play baseball and football. His gait, station and coordination were normal. The left upper abdominal reflex was 2 plus. The right upper abdominal reflex was absent. The lower abdominal reflexes were 1 plus. The cremasteric reflexes were 1 plus. The right knee jerk was 4 plus, and the left was 3 plus. The ankle jerks were 3 plus. There was a bilateral Babinski reflex, and an exhaustible ankle clonus. There was a zone of slight hyperalgesia and hyperthermesthesia at the eighth and ninth cord segments.

CASE 3.—L. F., a white woman, aged 29, married and a housewife, was admitted to the Brownsville Hospital, Feb. 28, 1928, complaining of inability to walk, and of difficulty in starting urination. February 24, she experienced precordial distress and a peculiar weakness in the lower extremities. She attempted to walk, but her feet gave way from under her. She had pain in the small of the back. A physician was called and found that she had acute tonsillitis and a temperature of 101 F. Physical examination on admission to the hospital disclosed acute pharyngitis and tonsillitis. The cranial nerves were normal. There was no evidence of any meningeal irritation. There was paresis of the muscles of both lower extremities, especially the flexors and adductors of the thighs. There

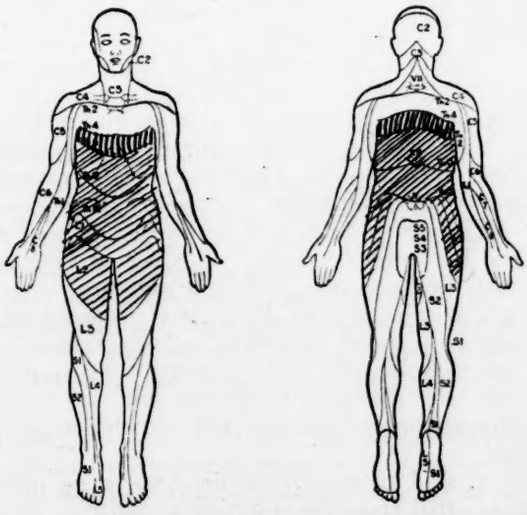

Fig. 3.—Sensory disturbances in case 3.

was a bilateral foot drop. The left lower extremity was more involved than the right. There was a zone of hyperesthesia and especially hyperalgesia at the fourth and fifth dorsal cord segments. Below this level and extending to the third lumbar cord segment there was diminution in pain, touch and temperature sensations. Muscle joint and vibratory sensibilities were intact throughout. The abdominal reflexes were present. The knee jerks were 1 plus; the ankle jerks were absent. Blood count showed white blood cells 11,900, with 76 per cent polymorphonuclears. Urine showed a faint trace of albumin. The spinal fluid was clear, came out under normal pressure, had increased protein, negative Wassermann reaction, and a colloidal gold curve of 3330000000. A blood Wassermann test was negative. The spinal manometric test as described by Stookey[15] was negative in every respect. The temperature on admission was 101 F.; the pulse was 96; respiration, 24; blood pressure, 115 systolic and 80 diastolic. The patient's general condition remained stationary until March 5, when she began to show a definite and rapid improvement. She was able to move her extremities. March 10, she was able to walk when supported. Her condition improved so that on March 17 she was able to walk unsupported and was free from any subjective symptoms. She was discharged on that date as cured.

CASE 4.—D. K., aged 15, a white schoolboy, was admitted to the Jewish Hospital, July 10, 1929, complaining of difficulty

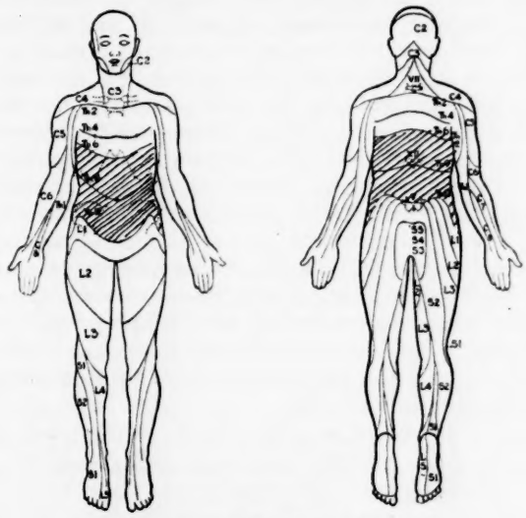

Fig. 4.—Sensory disturbances in case 4.

in starting urination and difficulty in walking. July 5, he had a dull ache in the lower part of the spine, worse on sitting or bending. The pain persisted despite all therapy. July 12, he commenced to have difficulty in starting the urinary stream. He was put to bed, and his back was strapped with adhesive plaster. On admission to the hospital there was congestion of the pharynx, the tonsils were inflamed, and there was a mucopurulent postnasal drip. The cranial nerves were intact. The patient was unable to sit up, bend or rotate his thighs or to flex or extend the legs. The knee jerks were only 1 plus and the ankle jerks were absent. The abdominal reflexes were absent. There was diminution in all sensations between the seventh dorsal and first lumbar cord segments. Spinal fluid came out under 100 mm. of water pressure, was clear, contained no cells, had 3 plus globulin, negative Wassermann and Kahn tests, was sterile on culture, and showed no colloidal gold reduction. A spinal manometric test was negative; blood Wassermann test was negative. A culture of the throat showed *Staphylococcus Albus*. Urine was negative. Blood count showed white blood cells numbering 21,600, with 83 per cent polymorphonuclears. The patient was unable to urinate and had to be catheterized. His temperature was 101 F., pulse 96 and respiration 24. A roentgenogram of the spinal column showed no pathologic charges. July 25, the temperature was normal and there was a gradual return of power in the lower extremities. July 31, the knee jerks and the ankle jerks were present and the motor power was almost complete in the lower extremities. The patient was then able to void voluntarily. The patient steadily improved and was finally discharged, August 12, showing at that time no more signs than a slight zone of hyperesthesia at the sixth dorsal cord segment.

COMMENT

It is quite apparent that the cases reported have been due to an unknown infectious agent producing an invasion chiefly of the spinal cord and to a lesser extent of the roots, causing radiculitis and paraplegia, with disturbance in the control of the bladder. Recovery was

15. Stookey, Byron; and Klenke, Dorothy: A Study of the Spinal Fluid Pressure in the Differential Diagnosis of Diseases of the Spinal Cord, Arch. Neurol. & Psychiat. 20: 84 (July) 1928.

complete in all but case 2, in which there were signs pointing to residual involvement of the pyramidal tract. Even in this patient the only complaint was constipation. There is considerable speculation as to the etiologic agent causing the infection. It is quite possible that it is due to an entirely new and as yet undescribed organism. On the other hand, it is quite likely that these cases represent an attenuated form of epidemic encephalitis. While during the epidemic the virus of epidemic encephalitis showed a marked preference for the basal ganglions and the gray matter around the third ventricle, producing the clinical picture so well known to those who have had the opportunity of following the disease, it later invaded other portions of the cerebrospinal system including the cord and roots, running a much milder clinical course. It is possible, therefore, that there has been some immunization against the virus, or else there has been considerable attenuation of the organism. When infection by this attenuated virus occurs, the clinical picture is much milder, and recovery follows without any, or with very few, residuals. No specific therapy was given to these patients. Strauss recommends the use of foreign protein intravenously. I [16] have used it in other forms of subacute inflammatory brain and cord diseases with considerable benefit to the patient.

SUMMARY

1. Attention is called to a recoverable type of myelitis.

2. Following infection of the upper respiratory channels there occurs, in young persons, paralysis of the lower extremities with loss of deep tendon reflexes, loss of abdominal reflexes, retention of urine, and subjective as well as objective sensory disorders segmental in distribution. There is slight leukocytosis. The spinal fluid shows an increase in protein and relatively little cellular reaction. Recovery is apparently rapid and complete.

3. A relationship between this disease and epidemic encephalitis is suggested.

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ABSTRACT OF DISCUSSION

DR. PETER BASSOE, Chicago: I should like to emphasize the fact that in the presence of the usual clinical signs of multiple neuritis the physician may be surprised to find such a large amount of albuminous material in the spinal fluid that he may easily think he is dealing with a spinal cord tumor or something else that is extremely serious. The first time I saw a case like that was a few years ago in a middle-aged man, a Greek, who looked as though he had a case of multiple neuritis without any good reason for having it. If I had been satisfied with a physical examination, I would have let it go at that, but rather unfortunately for my reputation I was curious and made a lumbar puncture and found a fluid that coagulated spontaneously with a high protein content. I changed my previous favorable prognosis to a more guarded one and hedged a good deal in talking with the patient and his friends. The result was that the patient was removed from the hospital and turned over to some other physician, and after a while he recovered. Another case I saw just a few weeks ago was that of an elderly man who was brought to a urologist on account of some chronic infections in the urinary tract. He also had a picture of multiple neuritis and the same kind of spinal fluid, not as highly albuminous as the previous patient, yet the total protein was quite a little above normal, and the globulin test was very strong, while the Wassermann reaction was negative. It seems as though there may be an increase in such cases now just as there was after the war, and if cases like this are on the increase again it would rather make me think that they are not connected with epidemic encephalitis but more with different kinds of infection, because, as a matter of fact, there is much less acute epidemic encephalitis now than there was some time ago, while at the same time there is a great increase in encephalitis in connection with all kinds of other infections.

DR. IRVING J. SANDS, Brooklyn: These cases have been a puzzle to me. When I first saw them I, too, thought they were cord tumors and then the negative manometric tests and the favorable recovery spoke for unusual syndromes. As to their cause, I don't know what they are caused by. It is quite possible that they represent a new disease yet undescribed. It is known that epidemic encephalitis is not as common as it formerly was. The infection seemed to have struck at a time when the population of the world was both physically and mentally of lowered resistance, and it ran wild. Possibly since then there may have been some immunization against encephalitis, or else the organism itself may have become attenuated; and it is not at all impossible that this may represent an unusual type of epidemic encephalitis. That is why I tried to link up the other cases, especially the group reported by the German and French observers—their polyneuritic cases. Still, it may be one of those unknown viruses.

16. Sands, I. J.: Amaurosis in Epidemic Encephalitis, J. A. M. A. **92**: 1241 (April 13) 1929.

EXPERIMENTAL AIR EMBOLISM OF THE CORONARY ARTERIES *

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In a previous communication [1] the constant presence of air was noted in the coronary arteries of guinea-pigs dead of air embolism induced by intratracheal insufflation of air. Subsequently it was determined to ascertain the effect of air injected directly into the coronary arteries of dogs. The following technic was used on thirty-five dogs: An incision was made in the left third or fourth intercostal space in its ventral fourth, the adjacent ribs were retracted, and the heart was exposed by a vertical incision in the pericardial sac. Air was introduced into the coronary arteries through a fine needle attached to a syringe. Intratracheal insufflation of ether and artificial respiration were maintained throughout the experiment. Four series of experiments were performed. In the first, air injections were made into the left coronary artery or either or both of its branches. In the second, injections were made into both coronary arteries. In the third, air was forced into the left auricle to secure simultaneous embolization of the two coronary arteries. In the fourth, air traps were inserted into the carotid arteries and air injections subsequently made into the left auricle or coronary arteries.

In a typical experiment of the first series, in which death resulted from the injection of air, the following points were noted: Immediately on the injection of air, the heart rate was accelerated from twenty to sixty beats per minute and cardiac contractions became tumultous. After from ten to thirty seconds the rate approached normal, and then gradually diminished until death. Meanwhile a profound cardiac dilatation was in progress, and the heart ballooned out of the pericardial incision. The results were variable; the quantity of air injected did not seem as important at times as the speed with which it was injected. Thus from 15 to 20 cc. of air injected into the descending branch of the

* From the Norman Bridge Pathological Laboratory, Rush Medical College, the University of Chicago.

1. Rukstinat, G. J., and LeCount, E. R.: Air in the Coronary Arteries, J. A. M. A. **91**: 1776-1779 (Dec. 8) 1928.

left coronary artery in ten seconds led to markedly irregular heart action, extrasystoles, acute cardiac dilatation and death in from one to four minutes. The same amount of air injected during forty to fifty seconds led to only slight disturbances, from which the animals recovered. There was no effect except a temporary cardiac acceleration after injections of from 2.5 to 5 cc. In two of eight dogs a retrograde embolism was noted. Following the introduction of 20 cc. of air rapidly into the descending branch of the left coronary artery there was a momentary stasis of blood from the injection site to the junction of the descending branch with the circumflex branch; then a regurgitation of blood and froth through the puncture wound and then into the circumflex branch. A simultaneous passage of air distally in the coronary arteries and proximally in the veins was frequently seen. Examination immediately after death disclosed practically identical conditions in all dogs in this group. The heart chambers, especially the right, the pulmonary artery, and, to a less extent, the veins contained bloody froth. In half the dogs there were small air bubbles in the abdominal aorta and the superior mesenteric artery and, to a far less extent, in the arteries of the neck and the brain. So far as the microscopic examination indicated, the myocardium sustained no damage except by too rapid injection of air directly into the arteries. In such hearts there were hemorrhages between the muscle fibers and occasional small tears suggesting the simultaneous exit of air and blood from arterioles.

Injections of air into both coronary arteries caused death in from twenty-five seconds to two minutes and post mortem the collections of air in the vascular system were similar to those in the preceding group. These rather prompt deaths followed no matter which artery was first injected. In the case of the posterior coronary artery it was necessary to deliver the heart out of the pericardial sac and suspend it in a gauze sling during the injection. Death occurred in five of six animals when 20 cc. of air was injected into each artery. In the sixth dog, a huge male Airedale, 60 cc. of air was injected into the front artery before death occurred. The time in which death occurred from total embolization of both coronary arteries coincides with that when the circulation is stopped by other means. Thus investigators,[2] conducting experiments on other phases of coronary occlusion, have found that death occurred in two minutes when the blood flow through both coronary arteries was stopped by tension threads passed beneath them.

Injections of air into the left auricle caused death in from thirty-five to seventy seconds when more than 40 cc. of air was used. In the dogs employed for this purpose there was widespread embolization. Huge collections of bubbles were noted in the aorta and the common iliac and carotid arteries, visible through the vessel wall and easily displaced. There were also beadlike arrangements of air in the cerebral arteries and veins. Results in this group of animals were inconstant. Two received 20 cc. of air and had a partial transient coronary artery embolization; five died after receiving between 45 and 100 cc. In the animals surviving there was cyanosis and acute cardiac dilatation, making suture of the pericardial sac difficult. In all these animals there was a churning sound with systole and diastole and a fremitus in the right ventricle like that which may be obtained from a rich lather.[3]

When air traps were inserted into the common arteries and the coronary arteries injected, the results approximated those of the first group. In two animals only a few bubbles of air entered the traps but the dogs died and the air bubbles were found widespread in the small cerebral vessels, the aorta and the pulmonary artery veins. In this connection it is to be noted that the dogs were kept in a horizontal position with a 2 or 3 inch roll under the right wall of the chest to aid in making the heart more accessible. The question of a delayed air embolism did not arise in any of the dogs and those that did not die at once went on to uneventful recovery. Although they were kept from one day to three months, none of the dogs had disturbances of gait or other evidence of cerebral or cardiac damage; moreover, alterations were not found by careful postmortem examinations or study of histologic preparations.

In order to compare uncomplicated cerebral air embolism with the foregoing, three dogs had from 2.5 to 10 cc. of air injected into one common carotid artery. Amounts less than 5 cc. were apparently insufficient to cause noticeable disturbances, but from 5 to 10 cc. invariably caused alarming symptoms entirely different from any exhibited by dogs with coronary air embolism. After recovery from the anesthetic, dogs with air embolism of a carotid artery lay in opisthotonos with nystagmus and rigid extremities. This posture gave way at short intervals to convulsive seizures lasting from twenty to thirty seconds, during which the opisthotonos increased, the forelegs described athetoid movements, the hind legs remained at rest or moved in erratic jerks, and the animal became wet with perspiration. At necropsy such animals had air in the meningeal veins and superior longitudinal sinus but nowhere else in the body. One dog died two and a half hours, the other about ten hours after operation. No gross or microscopic lesions were found in the brain of either dog.

Still other control experiments were made. Since ischemia of the brain due to air embolism was a possibility in dogs with coronary air embolism, both common carotid arteries were ligated in six dogs. They all recovered rapidly and manifested none of the symptoms of either cerebral or coronary air embolism. Four subsequently had air injected into their anterior coronary arteries and died as promptly as did dogs whose carotids were patent. In all these dogs, air was found in the leptomeningeal vessels, aorta and its larger branches immediately after death. Consequently in four dogs both common carotid arteries and in addition both vertebral arteries were ligated just before they entered the vertebral foramina. These dogs lived ten or fifteen minutes and then were killed promptly by injection of air into the left auricle so that air embolism of the coronary arteries resulted. Four dogs had their innominate and left subclavian and carotid arteries clamped within 1 cm. of their exit from the aorta and the hearts of these dogs kept beating for as long as fifteen minutes. Death, as judged by ventricular standstill, occurred in less than two minutes when air was subsequently injected into the left auricle.

In most of the experiments medium-sized mongrel dogs were employed but for four auricular injections

2. Pearcy, J. F.; Priest, W. S., and Van Allen, C. M.: Pain Due to Temporary Occlusion of the Coronary Arteries in Dogs, Am. Heart J. **4**: 390 (April) 1929.

3. Gundermann, W.: Ueber das Mühlengeräusch der Herzens, zugleich ein Beitrag zur Pathologie der Luftembolie, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **33**: 78, 1921.

small dogs weighing only from 8 to 12 pounds were used. These small dogs seemed to have a slightly greater resistance to death by air embolism than larger dogs subjected to the same procedure, but in so small a series it seems advisable to register this as only an impression. Other factors besides a difference in size and weight may have caused this apparent greater resistance of the smaller dogs. The coronary arteries in some dogs seemed exceptionally easy to inject and, although the arteries remained partially full of air for perhaps thirty seconds, there were only a few air bubbles seen passing proximally in the veins. In some of these hearts a souffle developed and perhaps this was brought about by air leaving the coronary arteries and entering the heart chambers through the thebesian vessels.[4]

In all the experiments the dogs were in a horizontal position, lying on their right sides during the injections of air. In from fifteen to thirty minutes after injection, those surviving usually were sufficiently recovered from the anesthetic to keep their heads up. None of these dogs showed symptoms of delayed air embolism as is noted in women who produce abortion by the intrauterine injection of liquids with which air is accidentally mixed.[5] Such persons may live minutes or hours after the introduction of air into the uterine veins. Preceding their death they have convulsions and cyanosis. After death the right heart chambers are filled with bloody froth and this apparently clogs up the pulmonary arterial circulation.

That the cardiac irregularities recorded as extrasystoles are really such seems well established by electrocardiographic records. Stepp and Parade,[6] seeking to prove cardiac death due to fibrillation, injected air, charcoal and various oily preparations into the left ventricle without any other operative procedure. After injections of air they found almost invariably ventricular extrasystoles and in from two to three minutes fibrillation. Since these observers found air in the cerebral and systemic vessels post mortem they did bilateral vagotomies and sympathectomies to eliminate cerebral influences. After such operations the disturbances in cardiac rhythm were unabated, and dogs died just as promptly as before vagotomy. Dogs that recovered from heart arrhythmia got well without showing signs of cerebral air embolism. At times as little as 1 cc. of air caused alarming cardiac symptoms.

Gundermann[7] found that air injected into the pulmonary veins promptly caused coronary air embolism and death. He found air widespread in the bodies of dogs after death produced in this manner but was satisfied that it had not been due to cerebral causes. Thus he never noted respiratory failure before cardiac failure but he noted persistence of respiration sometimes a minute or more after ventricular standstill. In the experiments here recorded, respiratory failure was guarded against by artificial respiration. To exclude, or, at least, to minimize the effects of air entering the arteries which supply important locations in the central nervous system, air was injected directly into the coronary arteries of dogs lying in a horizontal position, air traps were inserted into their carotid arteries and, in some instances, their carotid arteries were ligated prior to air injections into their coronary arteries. An endeavor was made to determine whether the manifestations of cerebral air embolism and coronary air embolism were similar, but no such resemblance was demonstrable.

While these experiments were being made, an unusual opportunity was afforded to examine the brain from the body of a 15 year old girl who died so abruptly after having the left antrum of Highmore irrigated that it seems reasonable to believe that death resulted from coronary air embolism. The clinical notations were that she went into a spasmodic faint at the completion of the irrigation, became markedly cyanotic, and died. At the autopsy, performed by Dr. Edwin F. Hirsch, the heart was opened with the thorax filled with water and many large bubbles of gas or air escaped from the opening in the right ventricle before frothy blood appeared. There were also bubbles in the leptomeningeal vessels, basilar artery and vessels of the serosa of the small bowel. There were no gross changes of the brain in multiple coronal sections cut at 10 mm. intervals and there were no changes in two series of microscopic preparations from the motor cortex, lenticular nucleus, dentate nucleus, thalamus, pons, medulla, substantia nigra, cornu ammonis or cervical spinal cord or from the parenchymatous organs. The lack of acute lesions in the heart muscle in deaths from myocardial failure as the result of coronary occlusion deserves further comment. Kaufmann[8] was so impressed by this integrity of the myocardium that he reported absence of muscle change, even when an interval of seven hours had elapsed between the beginning of a coronary thrombosis and death. Pathologists do not expect to find acute alterations in the cardiac muscle in sudden death from coronary obstruction. Complete obstruction by emboli stops the blood flow and is said to prevent saturation of the tissues with fluids necessary for the production of coagulation necrosis.[9] It is safe to assume that the heart muscle has not been examined in many deaths from air embolism.[10] This is probably due to the general belief that obstruction of the cerebral rather than the coronary arteries causes death with air embolism.

SUMMARY

Dogs whose coronary arteries are plugged with air die promptly. In such animals and also in human beings dying of air embolism there are no lesions demonstrable anywhere to explain death unless an exception is made of the presence of air in the blood. In air embolism of the coronary arteries, either recovery or death takes place promptly. Direct cerebral air embolism through the carotid arteries is succeeded by cerebral irritation which does not develop in dogs with solely coronary air embolism, although both may have apparently similar amounts of air in their leptomeningeal vessels. Delayed cerebral air embolism was not observed in dogs recovering from coronary artery air embolism.

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4. Wearn, J.: The Rôle of Thebesian Vessels in the Circulation of the Heart, J. Exper. Med. **47**: 293 (Feb.) 1928.
5. Ziemke, E.: Ueber plötzliche Todesfälle bei Schwangerschaft und Geburt, Deutsche Ztschr. f. d. ges. gerichtl. Med. **9**: 129 (Jan. 15) 1927.
6. Stepp, W., and Parade, G.: Untersuchungen und Betrachtungen über plötzlichen Herztod durch Kammer-flimmern., München. med. Wchnschr. **75**: 1869 (Nov. 2) 1928.
7. Gundermann, W.: Ueber Luftembolie, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **33**: 261, 1921.
8. Kaufmann, E.: Lehrbuch der speziellen pathologische Anatomie, ed. 8, Berlin, W. De Gruyter & Co. **1**: 43, 1922.
9. Henke, F., and Lubarsch, O.: Handbuch der speziellen pathologischen Anatomie und Histologie, Berlin, Julius Springer **2**: 391, 1924.
10. In addition to the general references to air embolism, the indexes and registers of such publications as the Vierteljahrschrift für gerichtliche Medizin und öffentliches Sanitätswesen, Virchows Archiv für pathologische Anatomie und Physiologie and the Lubarsch-Ostertag Ergebnisse der allgemeinen Pathologie und pathologische Anatomie des Menschen und der Tiere were consulted. In none of these was there any reference to the presence or absence of changes in the myocardium as a result of air embolism.

ADENOCARCINOMA OF THE HEAD OF THE PANCREAS

MISTAKEN FOR CALCIFIED CYST IN THE LOWER POLE OF A RIGHT ECTOPIC KIDNEY *

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ERIE, PA.

Tragedies occur to every physician, no matter how careful and thorough may be the study of a given patient. It is only by careful analysis that these may be turned to future advantage.

This is a report of a woman who noticed a tumor mass in the right side of the abdomen, which was freely movable. A competent man, head of a prominent diagnostic clinic, reported after a complete gastro-intestinal study that the tumor, which apparently was fixed to the lower pole of a freely movable right kidney, was probably a hypernephroma. Several cystoscopic studies were made with the final preoperative diagnosis, calcified cyst of the lower pole of the right ectopic kidney.

At operation the kidney was found to be perfectly normal, although freely movable. The tumor mass, which was below the pelvic brim, was easily delivered into the loin incision and easily removed. Death occurred forty-eight hours later.

Observations at autopsy revealed that an adenocarcinoma, involving the head of the pancreas, had been removed. Only the essential features will be detailed, although this case was thoroughly studied.

REPORT OF CASE

C. W. D., a woman, referred by Drs. Umburn and Strickland, June 23, 1926, complained chiefly of a lump in the right side. She had had a dull pain at the lower border of right ribs when on her feet or working hard. She noticed, six months before, a large lump in this position. She felt weak and tired and had a slight tendency to constipation. She had nocturia on the average of once a night. She had passed the menopause at the age of 50. There were no other symptoms.

The patient had had measles and mumps during childhood, a ruptured appendix thirty-two years previously, and curettement during the menopause.

The patient was married; her husband was living and in good health, and she had one child, who was living and well. Her father died at the age of 80 of apoplexy. Her mother died during childbirth. Two sisters and one half-sister were living and well. One brother died of sugar diabetes. There was no history of carcinoma or tuberculosis in the family.

The patient's blood pressure was 114 systolic and 80 diastolic. Her pulse, sitting was 68; standing, 74. The radials were not palpable. There was no dyspnea; her heart was regular with no murmurs. Her eyes were normal with no exophthalmos. She had no enlarged glands. Her lower teeth were all absent. Her tongue was clean. The tonsillar pillars were congested. The antrums and frontal sinuses were clear. The reflexes were normal. Station was good. An examination of the abdomen revealed a mass approximately 7 cm. in diameter that was felt to the right of the umbilicus near the median line. It was freely movable.

Fluoroscopic examination was negative for the chest. The stomach was of the tonic type. The lowermost portion of the greater curvature in the upright position was at the pubes in the median line. The pylorus was about 3 inches above this in the median line. The pyloric end of the stomach was pushed to the left by the mass in the abdomen, causing a pressure defect. This disappeared when the mass was pushed to the right and upward. The cap of the duodenum was obtained, which appeared to be of average size and regular in outline, when the mass was displaced to the right and upward, and when not displaced the cap was constantly flattened. In the supine position the stomach did not ascend in the abdomen but the lowermost portion remained at the pubes. Peristalsis was moderately active and could be traced on both curvatures from high up to the pylorus. The impression was that the mass had no connection with the stomach. The remainder of the gastro-intestinal fluoroscopic examination was unimportant.

The blood sugar was 101; urea, 23. The Wassermann reaction was negative. The red blood cells numbered 4,350,000; white cells, 7,600; hemoglobin, 77 per cent. Differential count: polymorphonuclears, 58 per cent; small mononuclears, 36 per cent; large mononuclears, 4 per cent; eosinophils, 2 per cent. The specific gravity of the urine was 1.012; acidity, 26. It was negative for albumin, sugar, indican, acetone, diacetic acid, bile or urobilinogen. It was microscopically negative except for a few epithelial cells and about 15 leukocytes per field.

The tumor mass was not connected with the stomach, the hepatic flexure, the region of the appendix or the gallbladder. The mass was limited to the region of the right kidney and was suspected to be a tumor of the right kidney. It was freely movable and probably a hypernephroma. A cystoscopic examination was recommended.

As a result of this report, which was made by Dr. E. G. Weibel, a cystoscopic examination was made, July 2, which revealed a normal bladder. There was no residual urine. A mild degree of trigonitis was present. Both ureters were normal in size, shape, position and function. There was no obstruction to the ureters. There was clear urine from both the right and the left kidney. The indigo carmine test revealed: right kidney: appearance time seven minutes, concentration time ten minutes. Left kidney: appearance time three minutes, concentration five minutes.

Fig. 1.—Drawing of a roentgenogram showing the relationship of the calcified tumor mass to the lower pole of the right kidney with the patient in the recumbent position.

Fig. 2.—Pyelogram taken with patient sitting up. Note relationship of the tumor to the lower pole of the right kidney, and notice practically normal pyelogram with no spindling out of the inferior major calix.

The left pyelogram was negative. The right pyelogram showed moderate nephrosis. The right kidney was much prolapsed when the patient was in a sitting position. Numerous irregular calculi were seen in the right side, which moved freely. They did not appear to be connected with the kidney.

The pyelographic report was made by Dr. B. S. Putts, roentgenologist, associated with me at St. Vincent's Hospital. Dr. Putts felt that, even though the calcified mass apparently moved with the kidney, it had no connection with it, and he maintained his attitude and opinion to the end. Contrary to the roentgenologist's opinion, I felt that the condition was a calcified cyst of the lower pole of a right ectopic kidney and this opinion was agreed on by two other men. Dr. Putts would not say what the tumor was, but he insisted that it did not appear to him to be of renal origin.

The facts were placed before the patient after a second cystoscopic examination which, again, verified the original observa-

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* Read before the Section on Urology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 27, 1930.

tions, and the difference of opinion between Dr. Putts and the rest of the consultants was explained. An operation was advised.

July 10, an incision was made over the right kidney and a perfectly normal right ectopic kidney was delivered into the wound without any mass attached to it. Because of its extreme mobility, this kidney was removed. An attempt then was made to find the mass which had been considered attached to the kidney. This mass was finally located through the renal incision deep in the pelvis and was delivered through the loin wound. The mass was easily shelled out and what appeared to be a large blood vessel running to the mass was ligated and cut. The mass was about 7 cm. in diameter. It was very vascular and the surface showed cystic degeneration. On section it consisted of fibrous tissue and was lobulated with a centrally placed cavity and scattered through the tissues were areas of calcification.

The pathologic diagnosis, which was not received until several days after death, was cystadenocarcinoma. Several pathologists were asked to see the section. Some called the specimens malignant and others were unwilling to make a diagnosis of malignancy. In the tumor itself there was nothing to indicate from what organ it came and at the operation the tumor and its location were not identified in spite of its removal. The following day, July 11, the patient died and the autopsy observations showed that the abdominal cavity was filled with bile. The ligature had slipped from the so-called vessel, which ran into the tumor and it was discovered that the duct of Wirsung had been cut, and from this bile had been flowing. The entire head of the pancreas had been removed, the tumor evidently developing around the duct of Wirsung, compressing and pushing the pancreas toward the periphery as it grew. There was no hemorrhage in the peritoneal cavity. There were a few adhesions around the site of the former appendectomy wound; otherwise the autopsy observations were negative.

COMMENT

On first thought, it would seem that this mistake in diagnosis would be impossible to make. Dr. Weibel, who made the gastro-intestinal study, was as surprised as any of us when the true nature and position of the tumor was revealed. It was the first time in the experience of any of us that a tumor in the head of the pancreas was so freely movable. This tumor could be placed in any part of the abdomen, down even below the pelvic brim. During the gastro-intestinal study there was nothing that in any manner suggested to the examiner the true diagnosis. It seems almost impossible that this should be so.

Two cystoscopic examinations revealed that there was a freely movable kidney on the right side, which could be placed at will in almost any abdominal position, and a calcified mass near the lower pole of the kidney moved with it and assumed approximately the same relationship in each pyelographic study, no matter what the position of the kidney. Such a mass involving the head of the pancreas, which is so intimately fixed to the stomach and duodenum, ought not to be so freely movable unless the other organs move with it. It does seem that the origin of the mass should be suspected as a result of fluoroscopic examinations, ordinarily. Because of its location and size it would also seem that there should have been some intestinal disturbance, while some hepatic symptoms, either objective or subjective, might have been present as a result of pressure. Instead of that the entire gastro-intestinal study was essentially negative.

The pyelograms showed plainly the various positions in which the kidney could be placed and always showed the calcified mass remaining in the same relative position in reference to the kidney, no matter what the position of the latter. Hypernephroma was ruled out because of the normal kidney study. The diagnosis of a calcified cyst of the lower pole of an ectopic right kidney was made because this seemed the most logical, the only disagreeing opinion being that of the roentgenologist, who maintained that the tumor mass was not attached to the kidney, although he would offer no opinion as to its origin.

CONCLUSIONS

1. A tumor in the head of the pancreas can be freely movable without any gastro-intestinal disturbance.
2. No matter how careful a group of physicians may be in the study of a given case, mistakes are still possible.
3. The identification of a tumor attached to the kidney without pyelographic changes is extremely difficult.
4. Nondistortion of a renal calix in a pyelographic study would seem to indicate that a mass, seemingly of renal origin, was something else.
5. Even though the kidney is freely movable and a tumor mass moves in direct relationship with it, the mass is not of necessity of renal origin.
6. The head of the pancreas, despite its normal fixation, may be freely movable, in this case as far down as to enter the true pelvis, and any abdominal mass may be pancreatic despite its mobility.

PRINCIPLES OF PROGNOSIS IN CANCER *

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My thesis rests on a conviction that it is a mistake, with present knowledge, to use any one criterion as the basis of clinical prognosis in cancer. It is such immature clinical utilization of scientific observations which discredits science and impedes its rightful progress. I bring this subject up because of recent literature on the grading of cancers. It is perfectly legitimate and proper to attempt grading; and various criteria should be recorded individually and collectively and studied. The facts, however, which my associate, Dr. Broders, and I have presented over a number of years, although they have scientific interest and furnish a better understanding of the behavior of cancer, should not be used for practical prognosis regardless of other important and well known clinical factors. From my own clinical and pathologic experience there are at least fifteen factors governing prognosis in cancer. I shall describe them briefly in the approximate order of their clinical importance.

1. *The presence or absence of glandular involvement and distant metastasis.* It may be stated that length of life is inversely proportional to the amount of glandular involvement and distant metastasis. To this principle there is the corollary that the proximity of death depends also on the vital anatomic location of both primary growth and metastasis. In support of this first principle many figures might be given. I shall, however, confine myself to a few of our own statistics.

I think it may be scientifically concluded that glandular involvement has something to do with prognosis.

2. *Fixation of growth.* The greater the fixation of a cancer to surrounding structures the greater the difficulty of surgical removal, the greater the immediate

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operative risk and the less the chance of complete recovery. I have no figures to substantiate this principle but practical experience shows that surgeons will not attempt the removal of a fixed growth. Such patients are referred to radiologists.

TABLE 1.—*Glandular Involvement*

Organ	Number of Cases Studied	Length of Postoperative Life	With Glandular Involvement, per Cent	Without Glandular Involvement, per Cent
Breast	962	Alive 3 yr.	39.25	74.6
Stomach	1,000	Alive 3 yr.	19	52
Breast	962	Alive 5 yr.	24.2	63.5
Lip	136	Alive 5 yr.	18.1	90.3
Breast	218	Alive 5-8 yr.	18.9	63.9
Breast	962	Alive 10 yr.	13.3	44

3. *Location.* Cancers located in organs that are easily accessible to a physical examination especially when the patient is forced to an examination by the presence of a tumor, hemorrhage, pain or obstruction usually receive early treatment and this is conceded universally by all to give the best prognosis. It may be stated, therefore, that malignant or benign tumors so located as to produce early pain, hemorrhage, mechanical obstruction or an easily recognizable mass are more favorable. The relation of organic location to size and favorability of early recognition may be seen in table 2, which represents a study of 3,778 cancers of the large bowel, breast and stomach.

In general it may be stated that, the greater the diagnostic and therapeutic accessibility of a growth and the earlier it produces incapacitating signs and symptoms, the better the prognosis.

TABLE 2.—*Relation of Location to Size*

	Average Size, Cm.	Largest, Cm.	Smallest, Cm.
Hepatic flexure	8.94	14	4
Cecum	7.8	15	3
Ascending colon	7.26	14	4
Transverse colon	7.22	14	2
Stomach	6.16	19	0.5
Descending colon	6.07	13	2
Rectosigmoid and sigmoid	5.94	15	1
Splenic flexure	5.9	8	2
Rectum	5.8	18	1.5
Breast	3.2	13	0.2

4. and 5. *Renal and cardiac efficiency.* The rôle which the heart and kidneys play in cancer is similar to that in general health. The lower the cardiac and renal efficiency, the poorer the prognosis, and especially the greater the immediate therapeutic risk.

6. *Anemia.* This condition is associated apparently with two different conditions: reduction of diet, single hemorrhage or constant or repeated oozing from the growth. Perhaps a third condition exists, although it is difficult to prove that it is not one of the two. By this I mean an anemia due to a theoretical toxic condition from the cancer itself or associated with its disintegration. In general, it may be said that, the greater the anemia, the greater the immediate therapeutic risk and the shorter the length of life. If, however, the anemia is the result of a single or a recent repeated hemorrhage from the growth, this may not necessarily alter the ultimate prognosis after the growth is removed.

7. *Size of growth.* In my own experience a long enough period has not elapsed since accurate measurements have been made to allow definite conclusions. Information, therefore, must be indirect. It has been established that there is a definite relation between size and the presence of glandular involvement which in turn has prognostic value. In table 3 the relation of size to the presence of glandular involvement may be seen. In the first five organs or portions of organs, cancers are usually very large. There is no apparent relationship in these, but in such organs as the rectosigmoid, splenic flexure, rectum, stomach and breast, where symptoms and signs appear early and are more easily recognized, there is a definite relationship. It is fair to state that, the larger the primary growth, the greater the possibility of glandular involvement and, hence the worse the prognosis.

8. *Age.* It is the general clinical impression that age has some bearing on the prognosis. Thus, clinical experience reveals that a cancer in a young person is usually more rapidly fatal than in an older person. It is very difficult, however, to study this problem statistically because many other factors are involved. If age

TABLE 3.—*Relation of Size to Glandular Involvement*

Organ	Number of Cases	Size With Glandular Involvement, Cm.	Size Without Glandular Involvement, Cm.
Hepatic flexure	16	8.55	9.34
Cecum	118	7.8	7.8
Transverse colon	61	6.85	7.6
Stomach	1,002	6.74	5.58
Splenic flexure	10	6.4	5.4
Rectosigmoid and sigmoid	469	6.04	5.84
Rectum	601	5.98	5.63
Descending colon	30	5.88	6.27
Ascending colon	28	5.6	8.92
Breast	1,443	3.92	2.53
Total	3,778		

alone is taken, there may be still a difference of size, location, fixation, duration, character of growth and glandular involvement, to say nothing of general factors such as pulmonary, cardiac and renal efficiency. In a series of 218 patients with cancer of the breast who died of recurrence, Dr. Sistrunk and I reported that 41.7 per cent over 50 years of age were alive from 5 to 8 years after operation and 31.8 per cent of those under 50 were alive for the same period. These figures confirm the general opinion. On the other hand, in studying the same series in decades we found many variations (table 4).

It would appear that no great generalizations could be drawn as to any constant differences in the different

TABLE 4.—*Age*

	30-40 Years			60-70 Years		
	Yr.	Mo.	Days	Yr.	Mo.	Days
Average postoperative life without glandular involvement	3	5	19	2	7	23
Longest postoperative life without glandular involvement	4	5	2	3	9	20
Shortest postoperative life without glandular involvement	3	0	22	1	8	22
Average postoperative life with glandular involvement	2	3	16	2	3	10
Longest postoperative life with glandular involvement	4	9	3	7	1	0
Shortest postoperative life with glandular involvement	0	5	18	0	8	5

decades in this series. I am of the opinion that generalizations regarding age alone, when applied to clinical practice, might sometimes be very misleading. I have seen patients under 30 years of age with cancer of the breast, rectum and ovary all live more than twenty years after radical treatment. I have seen cancers of the breast, apparently of the same type with glandular involvement, in two young single women between 20

and 30 years of age. One lived three years after the operation and the other seven years; the operations were the same and both lived under apparently the same social conditions. Despite the fairly common exceptions, it is perhaps correct to say that, the younger the patient the worse the prognosis, keeping always in mind that all other factors have an influence regardless of age.

TABLE 5.—*Relation of Presence of Glandular Involvement and Size*

Organ	Number of Cases	Size in Cm. Largest	Smallest	Average	Percentage with Glandular Involvement
Grade 4					
Stomach	55	15	3	7.8	85
Breast	72	13	1	5.4	75
Colon and rectum	10	9	5	4.4	80
Grade 3					
Stomach	67	15	2.5	5.8	62
Breast	53	7	1	3.25	58
Colon and rectum	58	15	3	6.1	77
Grade 2					
Stomach	25	16	1.8	6.7	12
Breast	32	12	0.8	3.4	18.7
Colon and rectum	138	13	1	5.6	35
Grade 1					
Stomach	1	7	7	7	0
Breast	0	0	0	0	0
Colon and rectum	21	11	1.5	4.9	9.5

9. *Direction of growth.* By this expression is meant whether the bulk of the cancerous mass is toward the lumen or surface of the organ or whether it is infiltrating the wall and growing toward adjacent organs or vital cavities, such as the peritoneal cavity in the case of intestinal cancers or the thoracic cavity in case of cancer of the breast. Some cancers of the intestines, especially the colon and stomach, grow massively toward the lumen with little or no invasion of the organic wall. Others do not grow toward the lumen but invade the wall, the serosa and the neighboring structures. Of the two types, the latter has the worse prognosis. It is more apt to have glandular involvement and may at the same time be much smaller than those which grow toward the lumen.

10. *Loss of weight.* There are probably several reasons for loss of weight in association with cancer: quality and quantity of food, mechanical obstruction, pain, worry and possibly infection and absorption of disintegrating tissues. As a single prognostic factor it is probably of little significance, but taken in association with some or all of the other factors it adds gravity to any prognosis. It must be kept in mind always that individuals who are underweight are usually better surgical risks than those who are overweight.

11, 12, 13 and 14. *Cellular differentiation, lymphocytic infiltration, fibrosis and hyalinization.* Differentiation, which is the sole basis of so many systems for grading cancers, is important but not as important as many clinicians have thought. It is of greater scientific than immediate clinical interest. There can be no doubt that there is some relation between the degree of differentiation of tumor cells and their rate of growth; but rate of growth is not the only factor in clinical prognosis. Size, location, infiltration, glandular involvement and fixation, lymphocytic infiltration, fibrosis and hyalinization must all be taken into consideration. In 1919 I wrote:

> There is one other important phenomenon in connection with cystoplasia to be described, i. e., cytodifferentiation. So far as the human organism is concerned, the cells which constitute the tumor are differentiated in three degrees during their evolution. The textoblasts . . . first arrange themselves according to the general direction of the adult tissue (primary differentiation). . . . In the first stage . . . the cells are still undifferentiated. . . . The second stage (secondary differentiation) consists of the establishment of tissue cytopolarity and the third (tertiary differentiation) consists of normal alinement, normal polarity and normal appearance of cytoplasm and nucleoplasm. . . . This phenomenon of differentiation is not only one which is seen during the evolution of normal tissues but one which plays an important rôle in the evolution and life history of neoplasms.

In 1918 and 1919 this factor was studied in a large series of gastric cancers with the following results:

1. Individuals with no glandular involvement and showing differentiation of the malignant cells live 14 per cent longer than those with no differentiation.

2. In those with glandular involvement and differentiation the increase was 20 per cent.

3. Differentiation was more frequent in association with glandular involvement.

In connection with the third statement, a recent study of relation of the presence of glandular involvement and size in 550 graded cancers was made with the results presented in table 5.

In the original gastric series (table 6) it is interesting to note that the presence of lymphocytic infiltration was of greater significance than differentiation. Its presence was associated with a 23 per cent increase of postoperative life. Also interesting is the fact that a combination of differentiation and lymphocytic infiltration was associated with an increase of postoperative life of 82 per cent. A study of table 6 reveals the apparent value of differentiation, lymphocytic infiltration, fibrosis and hyalinization, all of which cannot be determined without detailed microscopic study.

TABLE 6.—*Value of Differentiation, Lymphocytic Infiltration, Fibrosis and Hyalinization*

Factor	Average Length of Postoperative Life in Years: Stomach	Breast	Rectum	Percentage Increase of Postoperative Life: Stomach	Breast	Rectum
With lymphocytic infiltration	2.73	2.51	1.57	1	5.2	19
Without lymphocytic infiltration	2.7	2.48	1.31	..	..	..
With differentiation	2.73	3.65	1.54	6.6	53	42
Without differentiation	2.56	2.37	1.08	..	..	..
With fibrosis	....	2.72	1.53	..	45	18
Without fibrosis	....	1.87	1.29	..	..	..
With hyalinization	....	2.81	2.33	..	27	61
Without hyalinization	....	2.21	1.44	..	..	..
With lymphocytic infiltration and differentiation	2.8	3.78	1.59	80	54	123
Without lymphocytic infiltration and differentiation	1.55	2.45	0.71	..	..	..
With differentiation and fibrosis	....	3.87	1.58	..	97	37
Without differentiation and fibrosis	....	1.96	1.15	..	..	..
With differentiation and hyalinization	....	4	2.33	..	96	281
Without differentiation and hyalinization	....	2.04	0.61	..	..	..
With fibrosis and lymphocytic infiltration	....	2.69	1.65	..	92	41
Without fibrosis and lymphocytic infiltration	....	1.4	1.17	..	..	..
With lymphocytic infiltration and hyalinization	....	2.76	2.25	..	64	77
Without lymphocytic infiltration and hyalinization	....	1.68	1.27	..	..	..
With fibrosis and hyalinization	....	2.89	2.33	..	40	82
Without fibrosis and hyalinization	....	2.05	1.28	..	..	..
With lymphocytic infiltration, differentiation, fibrosis and hyalinization	....	4.4	2.25	..	189	196
Without lymphocytic infiltration, differentiation, fibrosis and hyalinization	....	1.52	0.76	..	..	..

15. *Duration of disease.* Nothing is more inaccurate and unreliable than the recorded duration of disease in most written histories of cancer. Duration is more important when applied to individual signs and symptoms, which unfortunately have nothing to do with the type or grade of cancer itself. Signs and symptoms in

cancer have to do with size, anatomic location, mechanical obstruction and hemorrhage. Even pain is usually insignificant unless associated with mechanical obstruction. None of these are diagnostic of cancer or even prognostic if therapy can be instituted. Many benign conditions present such signs and symptoms and may have been present long before cancer has arisen. In other words, it is often impossible to decide or determine the duration of the actual malignant growth in the great majority of instances. As a single prognostic sign it has little value. Inoperable cancers, especially of the stomach and colon, frequently have very short recognizable histories. In general the duration of the disease is mainly of value when taken in conjunction with other factors.

CONCLUSION

I think it may be said scientifically that any system of microscopic grading of cancer should not alone be of accurate clinical value without taking many other factors into consideration. Furthermore, any system which merely states that a certain percentage of patients with certain grades live a certain length of time does not necessarily furnish data for any specific case. In other words, there is no criterion by which one can state that a given case belongs in the favorable or unfavorable percentage. Moreover, the wise and successful practitioner of the art of medicine will certainly take all possible factors into consideration in making a clinical prognosis.

These practical clinical generalizations should not inhibit or prohibit pure scientific studies of possible factors which may or may not be indexes of behavior rather than prognosis in cancer. Perhaps these indexes might be of clinical value in the future, but at present all grading of cancers should be considered in the investigative or experimental stage.

ABSTRACT OF DISCUSSION

DR. J. SHELTON HORSLEY, Richmond, Va.: Dr. MacCarty has given a sane and logical description of what might be expected by the so-called grading of cancer. The factors he mentioned are the chief ones, but even they are not all. The differentiation of the cell, as he said, is one of the largest factors. Lymphocytic infiltration and fibrosis indicate resistance on the part of the patient. Another illustration of what he says regarding the multiplicity of things to be considered is the fact that sometimes cancer of comparatively low virulence, so far as the differentiation of the cells indicates, may be so extensive that the prognosis even after an extensive radical operation would be worse than with an incipient but more malignant lesion after a radical operation. Besides that, the manner in which the growth is removed or treated, the presence or absence of radiologic treatment, all should go along with making the prognosis. For instance, in operating for cancer of the breast, I frequently flush out the wound with salt solution under the impression that cancer cells may be expressed unconsciously into the wound during the operation. While manipulating the tissues ever so carefully there are certain cancer cells that might probably be squeezed out of the tumor and taken up by lymphatic vessels, and putting in drainage after the operation stimulates the tissues to throw off the lymph, which may carry away some cancer cells that might otherwise be absorbed by the lymphatics and cause distant metastasis. Things of this kind must be considered along with the histologic appearance of a tumor, even including as broad an aspect of it as Dr. MacCarty has included. However, I believe it is not only a great step in advance in the pathology and biology of tumors, but it is a practical clinical help to evaluate the histologic appearance of a tumor, because if a surgeon knows something of pathology and will mix it with the clinical study, it will be of enormous help in many cases. If he is guided merely by one single thing, he probably will fall into errors. In modern hospitals the prompt diagnosis of tissue by a competent pathologist with frozen sections, when taken along with these other factors, is of the greatest possible help.

DR. J. CLARENCE OWEN, Detroit: I should like to ask what single factor Dr. MacCarty thinks is most important in the prognostication—if he had to take a single factor.

DR. WILLIAM C. MACCARTY, Rochester, Minn.: If I had a new growth, I should want to know whether or not I had glandular involvement or other metastases. Secondly, I should want to know whether the surgeon could get it out or not. These are more important than any microscopic criterion of degree of malignancy, granting that the new growth is malignant.

DEVELOPMENTS IN THE PROBLEM OF ARTHRITIS*

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Neglected for many years, the problem of arthritis has been kept alive in the medical mind largely through the solicitude of orthopedic surgeons. Itself the legitimate child of internal medicine, it has been reared by others acting as foster parents to it. Having come of age, arthritis is at last being recognized and gathered unto the bosom of the medical family.

It is a gratifying spectacle to those interested in the rheumatoid problem to see that it is taking its place as one of the great chapters of medicine, along with tuberculosis and syphilis. Ten years ago there were perhaps two or at most three clinics for the study of arthritis. Today there are such clinics in nearly every medical center and, in some cities, several. The reasons for this development have been pressure from the industrial world to reduce disability pensions, especially in Europe; the natural internal growth of the subject through the small body of workers interested in it, and an awakened appreciation of the wide premises from which the disease springs.

There is in Europe today a large movement for the study and treatment of this disease. Cooperating with this movement is the American Committee for the Control of Rheumatism, which is giving an exhibit and demonstration at this convention. This activity toward the problem is justified not only by the economic and human importance of it and the necessity for the further understanding of it but also by the fact that real progress has been made in the grasp of the disease and in the methods and results of treatment. These results are available, however, only on the basis of a broad-minded approach to the problem. This approach necessitates familiarity not only with the symptoms of the disease but also with the morphologic and dynamic considerations that underlie it. In the brief time allowed this paper it will be possible to attempt only a bird's eye view of the field as a whole, with the aim of indicating the fluid condition of this growing problem and the directions in which it is extending.

For about fifteen years the medical profession has been regarding arthritis somewhat as society regards the problem of banditry. It has been focusing on the bullet that killed the man rather than on the state of society which permits banditry to occur. The important work of those bacteriologists who have helped to illuminate the doctrine of focal infection has brought out pathologic data and principles of great significance. It was supposed and hoped that work of this kind might

* Read before the Section on Orthopedic Surgery at the Eighty-First Annual Session of the American Medical Association, Detroit, June 25, 1930.

suffice to draw a circle around the whole problem. Bacteriologic workers are, properly, still investigating this field, and the results of further study are to be awaited with interest and expectation, but the arthritic problem as a whole is undergoing its main growth in another way and in another direction.

The profession is coming to recognize the two main types of the disease, atrophic and hypertrophic, and to give varying emphasis to the etiologic and therapeutic factors bearing on them. Without entering in detail on these considerations, which time precludes, it can be said that certain broad principles stand out in their application to the problem as a whole. It is possible to show to any dispassionate mind that arthritis is a systemic disease; that the background for it is often hereditary; that certain types of persons are most frequently attacked; in short, that there are prodromes that enable one to recognize susceptible individuals and often prevent the disease, especially perhaps in the atrophic type.[1] By the same token, it is recognized that there are not one but many factors operative in an etiologic sense in relation to the disease as a whole. Changes have been recognized in the fixed and fluid tissues of the body which point clearly to certain derangements of physiology as the cause of at least some of the symptoms. The problem of infection, of which so much has properly been heard in recent years, is seen to be in many cases only the precipitating agent, at best. In illustration of this one need only ask why the hosts of persons harboring focal infection have not all arthritis. Sometimes indeed, possibly often, focal infection is the result of the background rather than the cause of it. It is certain that joints and neighboring tissues sometimes harbor organisms. It has by no means been proved, however, that this occurrence is constant or, even when existent, that it represents anything more than an invasion from without into tissues of reduced vitality.

The derangement of function which physicians are now able to recognize as constituting a background of the rheumatoid problem is one that has to do, probably in several ways, with disturbance of the finer blood supply to various parts of the body,[2] and apparently more or less in both types of arthritis. Definite proof of this conclusion is to be found in studies of the blood gases, studies of the rapidity with which the circulation in arthritic patients takes care of substances absorbed into it from the digestive tract, and in the study of the blood count in the blood first issuing from the capillary beds at the periphery in the arthritic subject. Direct study, indeed, of these capillary beds under the microscope shows them to be the seat of irregularity and a general decrease in blood content and blood flow. This is furthermore borne out by studies of the surface temperature in the arthritic patient by means of the electric thermocouple.[3] Arthritic persons, as a whole, have lower peripheral temperatures than do normal persons because of the decreased blood flow in the tissues concerned. The capillary bed is seen to be rather immobile, in a state resembling vasoconstriction, and unresponsive to those adaptations which changes in the environment impose on it. This is probably the explanation of the added discomfort expressed by arthritic patients from changes in the weather. These circulatory changes also account apparently for the lowered metabolic rate shown by a large proportion of afebrile arthritic patients of both types.

Again, it has been possible to show clearly by experimental interference with the blood supply to the patella of dogs that the consequent reduction of blood flow is followed by unmistakable evidences of arthritis chiefly of the hypertrophic variety.[4] This result is not forthcoming in dogs in which the introduction of an equal amount of suture material and of operative trauma has been carried out.

The general disturbance in the capillary beds of arthritic patients, already described, is apparently brought about through the intermediation of the nervous system by virtue of inherent weakness in it, imbalance of it, or the influence of intoxicating factors operating centrally or peripherally on it. The influence of the nervous system in producing arthritis has been recognized for generations, by neurologists, in the Charcot's joints of tabes and syringomyelia. The association of Raynaud's disease with arthritis has long been known and recently there came from the Mayo clinic the surgical coup de grace, if such were indeed needed, in the form of the operation of sympathectomy. In those arthritic patients for whom such a severe procedure is justified, chiefly atrophic cases, the results may be striking.

Another development of significance must be mentioned. Since 1912 the writer has emphasized the etiologic rôle of the intestinal tract and the food intake in many cases of this disease of either type.[5] The dilated, elongated and distorted intestines of some of these sufferers have long been a familiar spectacle. Improvement of the gastro-intestinal function, lowering the burden imposed on the digestive system as a whole by cutting down the food intake, and improvement of the local and general metabolism in these sufferers have constituted a familiar and valuable therapeutic triad for the writer and his associates. Now comes a further interesting development at the hands of Fletcher,[6] who has shown that, concurrently with improvement along dietetic lines, the large bowel, distorted sometimes almost grotesquely, returns toward or to normal. This is so much the case that pictures taken in ill health and in convalescence of either atrophic or hypertrophic types, apparently, may not be recognizable as of the same individual. Animal experimentation shows that this abnormal picture can be artificially produced by diets in which inadequate vitamins, a large carbohydrate intake and curtailment of protein play a part. It is definitely shown that on this basis infection readily implants itself in many tissues.[7]

The wealth of philosophical considerations contained in these several lines of observation needs no emphasis. In the presence of such an etiologic and morphologic complex, it becomes obviously inadequate to expect any one therapeutic agent to break the vicious cycle. The generic nature of the etiology of arthritis and the many factors concerned in the disease require today a revamped outlook on it.

Attacking this problem with any drug or any vaccine alone is too often like firing at the head above the ramparts instead of at the fortification itself. In the opinion of most of the American committee for the control of this disease, it is of the first importance to

1. Proceedings of the American Committee for the Control of Rheumatism, J. A. M. A. **94**: 57 (Jan. 4) 1930.
2. Pemberton, Ralph: Arthritis and Rheumatoid Conditions: Their Nature and Treatment, Philadelphia, Lea & Febiger, 1929, p. 131.
3. Wright, L. M., and Pemberton, Ralph: Peripheral Surface Temperature in Arthritis, Arch. Int. Med. **45**: 147 (Jan.) 1930.
4. Goldhatt, A. D.; Wright, L. M., and Pemberton, Ralph: Am. J. M. Sc. **180**: 386 (Sept.) 1930.
5. Pemberton, Ralph: Arthritis and Rheumatoid Conditions: Their Nature and Treatment, Philadelphia, Lea & Febiger, 1929, p. 246.
6. Fletcher and Graham: Am. J. M. Sc. **179**: 91 (Jan.) 1930.
7. Pemberton, Ralph: Arthritis and Rheumatoid Conditions: Their Nature and Treatment, p. 191.

envisage the disease as a whole instead of focusing on any factor, be it mechanical, bacteriologic or nutritional, which may merely precipitate it.

For fifty years the tubercle bacillus has been recognized as the cause of tuberculosis. The organism itself is, unfortunately of necessity, practically ignored in a therapeutic sense. Specific treatment of tuberculosis today is based on broad physiologic considerations.

In arthritis, however, a variety of factors contributes to bring about the disease. No agency or organism is recognized by the American committee as the single cause of it. Can the profession not, in justice to the hosts of living arthritic patients, profit by the experience in tuberculosis, whose origin is confessedly infectious, and give these sufferers, too, the benefit of a dispassionate and balanced point of view for which there is much more justification and equal need? Whatever the future may bring forth in the way of a specific bacteriologic attack, for those cases in which such a measure has propriety, this is at least far distant. In any event, no drug, vaccine or any single form of therapy can alter the hereditary or constitutional make-up, the faulty anatomy or physiology of the intestinal tract or the deranged metabolism secondary to the disease, perhaps sometimes underlying it.

There is probably no other consideration before the medical profession more important in terms of persons now living than that of seeing this problem whole. Even irregular practitioners are now beginning to treat these sufferers with a breadth of view which some of the leaders of medicine do not entertain. The medical profession as a whole is not much more immune from prejudice of single-minded enthusiasm than are those who constitute it. Is it to allow to be repeated here the experience in the field of physical therapy in which the layman and the quack, almost alone, kept alive therapeutic principles rediscovered fifty years later by orthodox medicine?

The problem of arthritis is unrolling and developing before the eyes of the medical profession. Should not physicians highly resolve to catch up with and keep abreast of this evolution and extend its fine possibilities to the hosts of arthritic patients in this country? It is of importance to learn more concerning this protean disease, but it is even more important for the generations now living that the profession learn more of what is already known about it.

Orthopedic surgeons have gone afield in the past to atone for much neglect and mismanagement on the part of others. Their help may be equally necessary in the better mapped and brighter future.

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ABSTRACT OF DISCUSSION

DR. ARCHER O'REILLY, St. Louis: I want to thank Dr. Pemberton for this paper because it stresses the importance of a sane and rational treatment for arthritis. The very fact that many conditions are supposed to cause arthritis and that one has been told of dozens of methods of treatment and so-called cures impresses on one the fact that arthritis may be due to a number of causes or a combination of these, or that as yet the etiologic factor has not been found. At any rate, the idea of arthritis is rather vague and for that reason the average physician feels that it is one of those diseases for which little can be done. For that reason he shuns it as much as possible or else grasps at the various theories and nostrums or other ideas that are offered as cure-alls with the hope that he may be lucky. Lack of knowledge begets lack of interest. Dr. Pemberton's paper is particularly important because it stresses the fact that arthritis is a condition that can be helped, that with proper treatment it may in a great many cases be arrested or cured, and that many of the horrible results can undoubtedly be prevented. This end cannot be reached by the use of injections or medicines or by this, that and the other thing, but only by the one and only method that will cure any disease: the scientific study of each individual case and the correction of the deficiencies found. Each patient must be studied individually and not any one conclusion jumped at. The examination must be thorough, because if partial or superficial it only blinds one. When the bodily defects have been found, be they faulty posture, metabolism, focal infection or any others, then by their eradication and by a sane and rational treatment one may hope to get relief in many cases. A physician will not be successful in the treatment of arthritis until he studies his cases and stops just giving "rheumatism" medicine. I believe that this is the chief reason why the treatment of rheumatism has been so unsatisfactory, and the reason why Dr. Pemberton's paper is so important, because it emphasizes the necessity of a sane investigation of the patient and a rational treatment based on the conditions found.

DR. ROBERT B. OSGOOD, Boston: Dr. Pemberton gives orthopedic surgeons more credit than is their due. I fancy that he has really waked them to the proper attack. They have been thinking of arthritis in terms of the joints that they have to treat. They should think of it in terms of the generalized disease and be quite sure that if the attack is finally organized along broad and general lines they probably will not have these joints to attack and ought to be grateful if they do not have them. They must get away from any idea of specificity of cure; and that does not mean that in an early stage they may not, by taking out a tonsil or treating a sinus or a tooth, take the immediate overload off. But they see patients all the time who come with every known surgical focus, and some unknown, removed, and the arthritis remains the same. Those patients must not be led on from one nostrum to another. The surgeon must not tell them if they find another surgical focus and that if that were removed, they ought to be well, and, if they are not, that nothing can be done about it. The patients must not be given hope which, as some one has said, is such a poor virtue that disappointment often pays her debts. The orthopedic surgeon must sit down with them and talk to them of the general nature of their disease. Dr. Pemberton may call it a physiologic attack or a philosophic attack and make them see that it is not in its nature specific. By attacking the foundation stone, varying in the individual case but including regimen, freedom from fatigue both mental and physical, by starting them off with the belief that they have a campaign before them, as the average tuberculous patient realizes quite clearly and quite definitely that he has a campaign before him, then he may expect to accomplish better results. Why shouldn't patients with arthritis be educated to view their situation in the same way? If they do take that point of view, if they can be persuaded of the importance of the general attack, optimism and not pessimism should be the attitude of mind toward the control of arthritis.

The New Dance of Death.—Senility has the right of way. The physician must of necessity interfere to stop it; and some of his attempts upon a fabric that is already unstable, in which there no longer exists a profound impulse to revert to the normal, cannot but have extraordinary consequences. The situation now coming upon mankind as a sort of cumulative emergency, that of having to keep old bodies fit, of urging them out of bad situations, will produce a new Dance of Death. A new one in the quantitative sense there already is. The individuals who are now conserved throughout adult life die of diseases that have waited upon age from time immemorial but that have had few targets in the past, not hosts of them as now. And qualitatively too the dance must alter somewhat. Yet at this present moment in world affairs, when everywhere there is stirring and advancing, prying and comprehending, mastering and bettering, it is perhaps well to realize that the accustomed responses of our own bodies have resisted modernization. In the brief period since Linacre's day the Dance of Death has lengthened, the music has turned sweeter, Death has become less boorish, his partner not so passive, but the measure is still the same, still the only one that the human organism has proved able to tread.—Rous, F. P.: The Modern Dance of Death, London: Cambridge University Press, 1929.

CLINICAL DETERMINATION OF THE ALBUMIN GLOBULIN RATIO IN SPINAL FLUID*

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AND
ANTON R. ROSE, PH.D.
NEW YORK

One of the unexpected results of the publications of our urinary protein methods[1] was the receipt of many communications from workers interested in applying them to spinal fluids. As the methods are just as applicable to blood and spinal fluid as they are to urine, their successful application to the determination of the total protein of these materials followed as a matter of course. Following the publication of articles on the scopometer[2] and the protein fractionation methods,[3] our correspondents impressed on us the need of a practicable

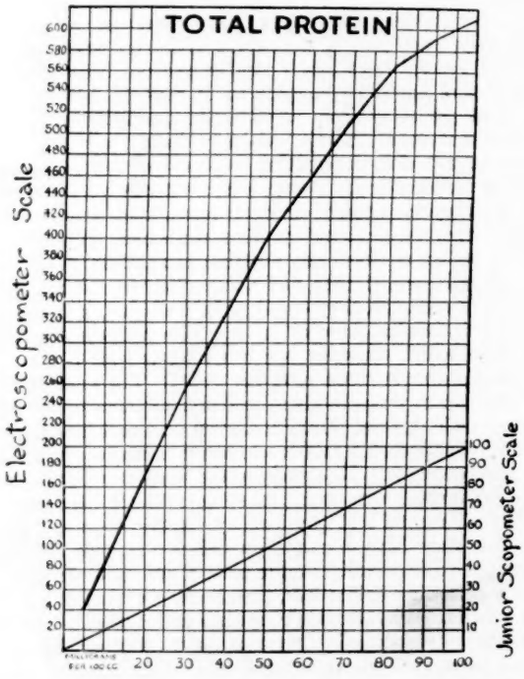

Chart 1.—Calibration of scopometers for total protein: The upper curve gives the equivalents of milligrams of protein per hundred cubic centimeters of spinal fluid by electroscopometer scale, the lower line by the junior scopometer scale.

clinical method for determining the albumin and globulin in spinal fluids and of obtaining from them the albumin globulin ratios.

The Prudential Laboratory tries to discourage its patrons from sending spinal fluids to it because of the danger of loss in the mails. It was therefore necessary to accept offers to supply material for the experimental work involved in modifying for spinal fluids the methods for determining albumin and globulin in blood and urine which were then nearing completion in the Prudential Laboratory, and we are especially indebted to Dr. Leo Spiegel for fluids derived from cistern punctures which yielded sufficient material for duplicates.

A survey of the literature of spinal fluids evidences a habit of interpreting quantitatively the gross appearances of purely qualitative procedures. That this practice is illusory and may lead to false and misleading conclusions will be patent to any one who will make quantitative as well as qualitative tests on samples of the same specimens. Apparently none of the tests in the literature of spinal fluids admit of quantitative deductions except the total protein method of Denis and Ayer.[4]

It may also be said of the tests for protein in spinal fluids found in the literature that none of them are specific for either albumin or globulin, and that while some of them are called globulin tests they are, as a matter of fact, tests for total protein, except that of Matz and Novick,[5] with which we have had no experience.

The mercury and phenol precipitations are the most interesting, especially the phenol, because phenol shows the presence of globulin in smaller concentrations than

Phenol Precipitates of Albumin-Globulin Prepared from Plasma

Total protein of solutions by Exton's reagent and scopometer	8,000 mg. per 100 cc.	
1:200 dilution		1:400 dilution
Globulin	29	15
	32	17
Average	30.5	16.0 mg. per 100 cc.
Albumin	10	4.0
	11	3.5
Average	10.5	3.75 mg. per 100 cc.
Calculated to original solution:		
Globulin	6,100	6,400
Albumin	2,100	1,500
Sum	8,200	7,900 mg. per 100 cc.
Average sum (i. e., total protein).....	8,050 mg. per 100 cc.	

it does albumin. If the same concentrations of albumin and globulin are precipitated separately with phenol, the globulin precipitate will be denser than the albumin precipitate. It is therefore possible to get positive phenol tests with relatively less globulin than albumin, and negative phenol tests with relatively more albumin than globulin. It should be noted, however, that moderate and larger amounts of albumin give very strong phenol reactions even in the complete absence of globulin. Therefore, a phenol test made directly on the spinal fluid does not admit of interpretation as regards either the amount of albumin or the amount of globulin or their ratio. While there is justification for suspecting the presence of some globulin in the majority of instances in which such tests as Pandy's turn out positively, it is, nevertheless, unquestionable that no differential protein test is specific unless based on protein fractionation or serologic methods.

The present method separates the two main protein fractions and is a modification of similar methods developed for blood and urine. In principle, the

* From the Laboratory and Longevity Service of the Prudential Insurance Company of America.

* Read before the Section on Pathology and Physiology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 26, 1930.

1. Exton, W. G.: A Simple and Rapid Test for Albumin and Other Urinary Proteins, J. A. M. A. **80**: 529-530 (Feb. 24) 1923; A Simple and Rapid Quantitative Test for Protein in Urine, J. Lab. & Clin. Med. **10**: 722-735 (June) 1925.

2. Exton, W. G.: Scopometry, Arch. Path. & Lab. Med. **5**: 49-63 (Jan.) 1928; The Junior Scopometer, J. A. M. A. **92**: 708-712 (March 2) 1929.

3. Rose, A. R., and Exton, W. G.: Fractional Precipitation of Protein in Urine, abstr. J. Biol. Chem. **67**: xli (Feb.) 1926.

4. Denis, W., and Ayer, J. B.: Method for Quantitative Determination of Protein in Cerebrospinal Fluid, Arch. Int. Med. **26**: 436 (Oct.) 1920.

5. Matz, P. B., and Novick, Nathan: Improved Colorimetric Procedure for the Quantitative Estimation of the Protein of the Cerebrospinal Fluid, J. Lab. & Clin. Med. **15**: 370-385 (Jan.) 1930.

method separates globulin from albumin in the classic way by half saturation with ammonium sulphate and then determines the concentration of each fraction by scopometry after precipitating the albumin and globulin separately with phenol.

Because the sum of the amounts of albumin and globulin obtained in this way correspond with the total protein results obtained with our protein reagent and scopometry, which gives excellent correspondence with Kjeldahl checks, it is easier to obtain the concentration of the albumin fraction by subtracting the globulin from the total protein than by precipitating the albumin separately as shown in the accompanying table.

METHODS

The following reagents and glassware should be conveniently at hand: a saturated solution of ammonium sulphate, a saturated aqueous solution of phenol,

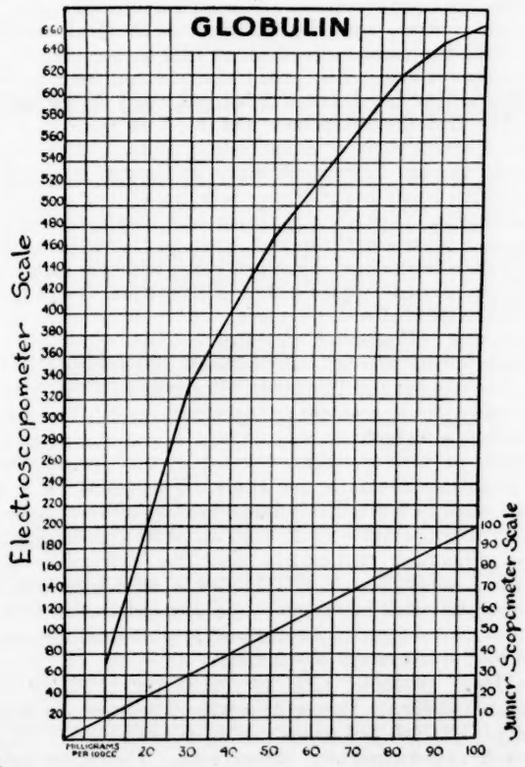

Chart 2.—Calibration of scopometers for globulin. The upper curve gives the equivalents of milligrams of globulin per hundred cubic centimeters of spinal fluid by electroscopometer scale, the lower line by the junior scopometer scale.

Exton's protein reagent, distilled water, some clean test tubes having a diameter of 12 mm., a dense or hardened filter paper[6] having a diameter of 55 mm. and a small funnel about 60 mm. long with a diameter of about 30 mm. We proceed then as follows:

1. *Total Protein.*—Equal volumes (1 cc.) of spinal fluid and protein reagent are mixed and the resulting turbidity is measured in the scopometer.

2. *Globulin.*—A. Equal volumes (2 cc.) of spinal fluid and ammonium sulphate solution are mixed and let stand a few minutes for the globulin to salt out.

B. The mixture is filtered and the filtrate passed through the same filter until clear, care being taken to drain the test tube thoroughly. The filtrate is now an albumin solution and may be set aside in case it is desired to precipitate and measure the albumin separately. The salted out globulin is on the filter paper in the funnel, which is now placed in a clean test tube.

C. Two cubic centimeters of distilled water is poured on the filter paper, so as to bring the globulin into solution, and this is passed three times through the same filter paper so as to insure having a perfectly homogeneous globulin solution.

D. After the funnel has been thoroughly drained, 0.2 cc. of distilled water is added in the tip of the the filter cone to wash down the globulin that adheres to the tip of the cone.

E. One cubic centimeter of ammonium sulphate solution is added to the globulin solution and mixed.

F. The globulin is precipitated by adding 3 cc. of the phenol solution and mixed by gently inverting the tube *once* (it should not be shaken). The globulin phenol precipitate is allowed to stand at least fifteen minutes without disturbing and the turbidity is read in the scopometer some time between fifteen and thirty minutes after precipitation. The number of milligrams of globulin per hundred cubic centimeters of spinal fluid is then obtained by dividing the junior scopometer scale reading by 4.

3. *Albumin.*—The albumin is obtained by subtracting the globulin from the total protein. If for any reason a separate precipitation of the albumin is desired, 1 cc. of distilled water is mixed with 2 cc. of the original ammonium sulphate filtrate and precipitated with phenol as for globulin. The number of milligrams of albumin per hundred cubic centimeters of spinal fluid is then obtained by dividing the junior scopometer scale reading by 2.

The sensitivity and precision of the methods are indicated by the scopometric calibrations for the globulin and total protein shown in the accompanying charts.[7]

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ABSTRACT OF DISCUSSION

DR. LEO SPIEGEL, New York: Suboccipital puncture made spinal fluid available in quantities of from 20 to 30 cc., thus enabling me to determine the total protein and globulin fractions of this fluid in addition to the usual tests necessary in cases of syphilis. Since getting in touch with Dr. Exton last December, I have made more than 500 total protein examinations. These tests are made in the clinic or in my office since it requires but a few minutes. As a result, one gets a truer insight as to the degree of pathologic change in these cases of neurosyphilis. It therefore not only is of diagnostic and prognostic value but also serves as a guide to the result of the therapy in these cases. The figures show how the total protein comes down as a result of therapy and repeated drainage. I believe this test should be carried out by the clinician and syphilologist in the clinic or in his office. Exton also shows a method of quickly determining the globulin fraction. These tests, as he has stated, are not specific for globulin except in the first phase of the Nonne reaction; furthermore, they have little therapeutic significance as heretofore interpreted. The importance of determining the globulin fraction is self-evident when one considers that a normal spinal fluid, according to Solomon, does not contain any globulin, and also the fact that Kahn precipitates the spinal fluid with ammonium sulphate and utilizes this globulin fraction in determining the spinal fluid Wassermann reaction. As to the significance of the albumin-globulin ratio, I am unable at present to come to any conclusion. However, I agree with Solomon that a normal spinal fluid does not contain any globulin. I believe the normal limits of the total protein to be about 20 mg. per hundred cubic centimeters. These figures are corroborated by the volumetric method of Young, Bennett, Christlieb and Myers

6. A hardened paper is much slower than a dense paper but the filtrate need not be passed through the funnels so many times. We use either Whatman number 50 or Carl Schleicher and Schull number 575.

7. Exton, W. G.: The Photo-Electric Scopometer, Proc. A. Life Insurance Medical Directors of America **16**: 141-142, 1929.

in their latest report. A fluid containing from 15 to 20 mg. or more of total protein with globulin is potentially a fluid of abnormality and is invariably accompanied by a positive Wassermann reaction and a precipitation of the colloidal gold solution. Exton's method of separating the globulin fraction and determining it quantitatively by scopometry is a distinct advance and of decided clinical value.

DR. WILLIAM G. EXTON, Newark, N. J.: There is an interesting point I hoped Dr. Spiegel might mention because I did not want to touch on the clinical side. In the course of the work many weekly or biweekly specimens from the same patients, mostly neurosyphilitic patients, were tested. Dr. Rose called my attention to the fact that although the total protein varied, possibly as a result of treatment, the albumin-globulin ratio stayed fairly constant for the individual. It struck me that if the albumin-globulin ratio of individuals with primary syphilis was known, it might help to establish the diagnosis of neurosyphilis easier and earlier.

DR. R. L. KAHN, Ann Arbor, Mich.: I should like to ask, What were the observations in the case of fluids, not from neurosyphilitic, but from both normal and pathologic fluids?

DR. WILLIAM G. EXTON, Newark, N. J.: We have examined fluids from a great variety of cases submitted by different men interested in trying to get the test. I felt that was a matter on which we have little material of our own. I thought I ought to leave that to them.

Clinical Notes, Suggestions and New Instruments

ACUTE HEMORRHAGIC PURPURA ASSOCIATED WITH EXOPHTHALMIC GOITER *

ARNOLD S. JACKSON, M.D., MADISON, WIS.

Acute hemorrhagic purpura is a rare disease and perhaps of sufficient interest itself to warrant a case report, but a search of the literature has failed to reveal any instances in which this disease has been associated with exophthalmic goiter.

Hemorrhagic purpura is an acute or chronic disease characterized by a marked decrease in the number of blood platelets, spontaneous hemorrhages from mucous membranes and purpura. The blood platelets are greatly reduced from the normal of from 300,000 to 400,000 to less than 100,000 and, in acute cases, to even less than 20,000. If the blood vessels are injured in a case of hemorrhagic purpura, the effused blood clots, but the clots do not contract. Thrombosis does not take place readily in the injured vessels and the bleeding time is greatly prolonged.

In 1775 Werlhof [1] first described this disease and established it as a distinct clinical entity. In 1916 Kaznelson [2] performed the first splenectomy for chronic hemorrhagic purpura. In 1925 Giffin and Holloway [3] collected reports of all the cases of splenectomy in the literature and added one of their own, making a total of twenty-eight cases in which splenectomy had been performed for this disease. In 1928 Giffin [4] again reported a series of twenty cases of hemorrhagic purpura in which splenectomy was performed, with no deaths. No reference is made to any cases of the acute type. It is generally agreed that splenectomy is indicated in the treatment of the chronic type of hemorrhagic purpura, but there is a brevity of reports and a difference of opinion with regard to the acute type. In 1929 Killins [5] reported an acute case in which splenectomy resulted in a cure. Marsh [6] reported two cases of the acute type from the Jackson Clinic in which splenectomy also resulted in a cure. In seven of the eight acute cases collected from the literature by Whipple,[7] splenectomy was attended by a fatal outcome. Spontaneous cure has occurred in some cases.

Osler [8] states that purpura hemorrhagica is most common in young and delicate individuals, particularly in girls, although the disease may attack adults in full vigor. After a few days of weakness and debility, purpuric spots appear on the skin and rapidly increase in number and size. Bleeding from the mucous surfaces sets in and the epistaxis, hematuria and hemoptysis may cause profound anemia. Death may result from loss of blood or from hemorrhage into the brain. Slight fever usually accompanies the disease. In favorable cases the disorder terminates in from ten days to two weeks. In purpura fulminans, seen usually in children, death may occur within a day.

Little is known regarding the etiology of hemorrhagic purpura, but infections and toxins are considered as possible factors. It is interesting, in connection with the case I shall report, that Osler mentions potassium iodide as an etiologic factor. The use of compound solution of iodine appeared to have a direct connection with the inception of the following case:

A white woman, aged 50, admitted to the Jackson Clinic, Feb. 2, 1929, had come to the clinic in 1924 on account of severe bleeding hemorrhoids. She stated that she had been unusually nervous and that her heart had become rapid during the past year. She had lost 30 pounds (14 Kg.) in spite of a good appetite (characteristic of exophthalmic goiter). For the past five weeks she had been bedridden on account of weakness. A tremor of the hands and excessive perspiration had been noticed for two months. Her home physician suspected hyperthyroidism and made a therapeutic test with compound solution of iodine. She felt that she had not improved much with the iodine. She casually mentioned having had a severe nasal hemorrhage a week before admission to the clinic.

A physical examination revealed evident signs of hyperthyroidism. The thyroid was symmetrically enlarged and pulsating, but without thrill or bruit. There was no exophthalmos, but a marked tremor of the hands was present. The skin was atypically dry. The heart was slightly dilated and rapid with a pulse rate of 140. A slight blowing systolic murmur at the apex was transmitted to the axilla. This could be a hemic murmur, such as is frequently heard in cases of hyperthyroidism, but with a temperature of 99.4 F. an acute endocarditis could not be eliminated, particularly since the extremities showed evidence of minute petechiae. The tonsils were large and septic, but other foci were not noted. The lips and conjunctiva were pale, and the evidence of anemia and hyperthyroidism was confirmed by the laboratory observations.

The basal metabolic rate was +52 per cent, the weight 94 pounds (43 Kg.). Hemoglobin was 50 per cent, erythrocytes numbered 3,000,000 and leukocytes 4,100, lymphocytes 30, transitionals 8 and neutrophils 62 per cent. The Kahn test was negative.

Until this time, acute hemorrhagic purpura had not been considered. The case was diagnosed as exophthalmic goiter with a secondary anemia and possible purpuric spots. The patient was sent to bed and given 10 drops of compound solution of iodine six times a day. Within twenty-four hours severe and profuse hemorrhages occurred from the mucous membranes of the nose, mouth, bladder and rectum. These were so severe that the patient's life was despaired of at one time.

The literature contains a dearth of advice with regard to treatment for acute hemorrhagic purpura. Since Osler mentioned iodides as a possible etiologic factor, compound solution of iodine was reduced to a minimum dosage in spite of the increasing severity of the hyperthyroidism. The patient was on the verge of a crisis at the time, and, for lack of anything better to attempt, calcium and ultraviolet irradiation were given, also liver extract, cod liver oil and tissue fibrinogen. Blood transfusion was held in reserve. Although the hemorrhages

* From the Jackson Clinic.

1. Werlhof, P. G.: Opera medica, i, collegit et axuit, Hannoverae, I. E. Wichmann, 1775.
2. Kaznelson, P.: Verschwinden der hämorrhagischen Diathese bei einem Falle von essentieller Thrombopenie (Frank) nach Milzexstirpation: Splenogene thrombolytische Purpura, Wien. klin. Wchnschr. **29**: 1451-1454, 1916.
3. Giffin, H. Z., and Holloway, J. K.: A Review of Twenty-Eight Cases of Purpura Hemorrhagica in Which Splenectomy Was Performed, Am. J. M. Sc. **170**: 186-204 (Aug.) 1925.
4. Giffin, H. Z., and Brown, G. E.: Blood Volume Preceding and Following Splenectomy in Hemolytic Icterus and Splenic Anemia, Collected Papers of the Mayo Clinic **20**: 641-648, 1928.
5. Killins, W. A.: Acute Thrombocytopenic Purpura Cured by Splenectomy, J. A. M. A. **92**: 1832-1833 (June 1) 1929.
6. Marsh, H. E.: Splenectomy in Acute Hemorrhagic Purpura, Ann. Surg. **91**: 313-316 (Feb.) 1930.
7. Whipple, A. O.: Splenectomy as a Therapeutic Measure in Thrombocytopenic Purpura Hemorrhagica, Surg. Gynec. Obst. **42**: 329-341 (March) 1926.
8. Osler, William: The Principles and Practice of Medicine, New York, D. Appleton & Co., 1919, p. 753.

continued intermittently for days and there was marked evidence of purpura, an immediate improvement occurred. Whether this was spontaneous or the result of reducing the iodine or the effect of the therapy could not be ascertained.

In the meantime, however, the patient became iodine fast, the basal metabolic rate having increased to + 66 per cent. At the end of three weeks a blood transfusion was given to prepare the patient for operation; a primary thyroidectomy was performed when the basal metabolic rate was + 56 per cent.

Convalescence was uneventful and three months later the basal metabolic rate had dropped to + 14 per cent, and the pulse rate to 90. A year after operation the patient had gained 40 pounds (18 Kg.); she felt perfectly well and appeared cured. The purpura had not recurred.

A communication from Bonta[9] of the Mayo Clinic, at the time the patient was under observation, stated that the condition found was indicative of a definite case of hemorrhagic purpura associated with exophthalmic goiter. He did not recall that this condition had ever been seen before. Haines,[10] also of the Mayo Clinic, stated that he had never seen purpura develop following the use of compound solution of iodine in exophthalmic goiter.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

DIPHTHERIA TOXOID (See New and Nonofficial Remedies, 1930, p. 364).

Lederle Laboratories, Inc., Pearl River, N. Y.

Diphtheria Toxoid (See THE JOURNAL, Nov. 15, 1930, p. 1505).—Also marketed in packages of ten immunization treatments containing two 1 cc. vials of diluted diphtheria toxoid for the reaction test and twenty 1 cc. vials of diphtheria toxoid for treatment; in packages of fifteen immunization treatments containing one 1 cc. vial of diluted diphtheria toxoid for the reaction test and one 30 cc. vial of diphtheria toxoid for treatment.

DIPHTHERIA IMMUNITY TEST (SCHICK TEST) (See New and Nonofficial Remedies, 1930, p. 380).

The National Drug Co., Philadelphia.

Schick Test.—Marketed in packages of one capillary tube containing undiluted diphtheria toxin standardized, sufficient for ten tests, accompanied by the required amount of sterile diluent; in packages of one capillary tube containing undiluted diphtheria toxin standardized, sufficient for fifty tests, accompanied by the required amount of sterile diluent; in packages of two capillary tubes containing undiluted diphtheria toxin standardized, sufficient for one hundred tests, accompanied by the required amount of sterile diluent. As a means of control, the Schick test control, representing diphtheria toxin of the same lot, heated sufficiently to destroy the specific exotoxins, is supplied.

EPHEDRINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1930, p. 169).

Ephedrine Hydrochloride-Gane and Ingram.—A brand of ephedrine hydrochloride-N. N. R.

Manufactured by Gane and Ingram, Inc., New York. No U. S. patent or trademark.

EPHEDRINE SULPHATE (See New and Nonofficial Remedies, 1930, p. 170).

Ephedrine Sulphate-Gane and Ingram.—A brand of ephedrine sulphate-N. N. R.

Manufactured by Gane and Ingram, Inc., New York. No U. S. patent or trademark.

TUBERCULIN-KOCH (See New and Nonofficial Remedies, 1930, p. 358).

The National Drug Co., Philadelphia.

Tuberculin Old (Human).—Marketed in single 1 cc. vial packages, each cubic centimeter representing 0.5 Gm. tuberculin-Koch; also in packages of one 4 cc. vial, each cubic centimeter representing 0.25 Gm. tuberculin-Koch.

9. Bonta, M. B.: Personal communication to the author.
10. Haines, S. F.: Personal communication to the author.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

W. A. PUCKNER, Secretary.

AVESAN (H) NOT ACCEPTABLE FOR N. N. R.

Avesan (H), according to the Avesan Chemical Company, Los Angeles, is "Indicated in tuberculosis, asthma, bronchitis and bronchiectasis." It is also stated to be "Effective in minor disturbances of the respiratory organs." It is supplied in ampules and is administered subcutaneously.

Avesan (H) is stated by its proprietors to be "a purely chemo-therapeutical product" which is "composed of formic acid, sodium nucleinate, camphor, allyl sulphide and chlorophyl with traces of salicin and sulphuric ether." The twenty minim ampules are stated to contain: formic acid, 0.014 Gm.; sodium nucleinate, 0.028 Gm.; camphor, 0.07 Gm.; allyl sulphide, 0.00011 Gm. It is claimed that the formic acid and chlorophyll in the preparation "are derived from plants, some indigenous to this country and others of foreign growth," and although formic acid is a definite chemical entity and must have the same properties no matter how obtained, it is asserted that "formic acid . . . as produced by us contains other ingredients which appear to have a direct action on the tubercle bacilli and also on streptococci and staphylococci."

The information and advertising submitted to the Council by the Avesan Chemical Company were submitted for an opinion to a consultant of the Council who has given much attention to the management of tuberculosis. The consultant replied that the evidence furnished for the efficacy of Avesan (H) was not of a character to recommend the product. He pointed out that the absurd statements of the firm that the particular kind of formic acid in the preparation contains other ingredients and the claim that Avesan (H) encysts the bacilli cast grave doubt on other claims that are made by the firm. Since the identity of Avesan (H) with the product "Nuforal" introduced some years ago was admitted by the manufacturer, the Council's consultant looked up some of the publications concerning the latter product and found that on the whole the published reports do not commend it and at least one definitely opposed it. He expressed the opinion that there was no evidence to show that "thujone, succinic acid and keton-pino-camphene" and the other compounds mentioned in the advertising have any such destructive action on tubercle bacilli as the claims would indicate and that garlic, of course, has little place in the therapeutics of tuberculosis today, despite the claim in the advertising that allyl sulphide is a tonic and exercises a soothing influence on the mucous membrane of the air passages. The consultant pointed out that while the submitted clinical claims are impressive if taken at face value, it must be remembered that there are thousands of cases of tuberculosis that have done just as well as the cases cited by the Avesan Chemical Company with no other treatment than rest and hygienic care.

Although "Avesan (H)" under its present name or as "Nuforal" has been before the profession for many years, no acceptable clinical evidence to demonstrate its effectiveness has been brought forward. There appears to be no rational basis for the use of a mixture of formic acid, sodium nucleinate and allyl sulphide in the treatment of tuberculosis, asthma or other respiratory disorders; certainly there is no evidence to indicate that the mixture will have a specific action on the tubercle bacillus.

There does not appear to have been any attempt to carry out controlled clinical studies with the product, and the reports of the physicians referred to in the evidence offered by the Avesan Chemical Company are the typical uncritical statements of men not accustomed to scientific work.

The Council declared Avesan (H) inadmissible to New and Nonofficial Remedies because no acceptable evidence for the efficacy and rationality is presented, because unwarranted claims are made, and because no evidence was supplied to show that the composition and uniformity of the preparation are adequately controlled.

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SATURDAY, JANUARY 3, 1931

CORRELATION OF BIOLOGIC REACTIONS IN HEALTH AND IN DISEASE

The rapid development of scientific medicine has produced a number of antithetical concepts. Such terms as anatomic, physiologic, bacteriologic, immunologic, hormonal and nervous regulation, genotype and phenotype come readily to mind. Specialistic overenthusiasm and the unlimited accumulation of detailed data have emphasized the divergent and uncoordinated nature of the developments. Any disease, symptom or sign is more or less convincingly "explained" by one of these terms according to the specialty interesting the author. In this chaotic condition, a recent development attempting to synthesize the divergent points of view into a system in which the proper place and correlation is given to all the structural, functional and external factors seems hopeful. Its logical conclusion must be a reconstruction of the entity of a given individual out of its factors of heredity and environmental influences, and to establish his specific chemical, hormonal and nervous formulas, which in their turn condition his responses to stimuli, physiologic or pathologic. Friedrich Kraus's "Die allgemeine und spezielle Pathologie der Person" is—even in its title—a representative product of this newer tendency. In this connection, the recent report by Petersen and Levinson [1] deserves most careful attention. The main object of their studies may be defined, in their own term, as "the individual constitutional reactivity." They hold "that in seeking to define constitution in terms of measurable biologic reactions, rather than in developmental attributes, some progress might be achieved." They approach their aim with a study of 100 so-called normal men, which in completeness of data is quite unequaled. The scope of the work is best indicated by a list of the examinations of every subject. These include determination of the calcium, potassium, carbon dioxide combining power, sugar, cholesterol, globulins and total protein of the blood; the skin blister by the cantharides method, with determination of the relative permeability of the capillaries and determination of the blister time; the basal metabolic rate and the weight length ratio; reactions to the subcutaneous injection of epinephrine hydrochloride as shown by pulse rate and blood pressure; the skin reaction to the Kromayer lamp; the skin reaction to ice; the muscle reactions, as shown by the threshold of electric current that will provoke reactivity; the resistance of the moist skin for direct current of low amperage; the reactions to intracutaneous injections of morphine, epinephrine hydrochloride and thyroxine; a roentgenogram of the chest; a physical examination and history, particular emphasis being laid on a history of sensitization or previous infectious diseases, alcoholism and the amount of hard physical labor; a Wassermann test; a urinalysis, and examination of the skin capillaries. The data obtained are then analyzed for correlations, which are thoroughly discussed in their possible significance. Exceptional variations in these data were caused by the fact that only twenty men of this group were really normal, the rest showing evidence of tuberculosis, cardiorenal disease, syphilis, or other pathologic changes. Essentially similar studies were made on exophthalmic and nervous patients, on persons who were sensitized and on dermatologic patients, and finally on a group of eighty-three tuberculous patients.

The authors did not wish to find diagnostic or prognostic tests as shortcuts to practical medical problems but to add to the understanding of the biologic processes that are manifested in disease. From the list of examinations it is evident that the interest was centered on the vegetative status of the individuals, as manifested by vascular reactions, and as linked with chemical and hormonal conditions, and on the status of the skin particularly on its reactions to inflammatory stimuli. What might be called the impressionistic constitutional type is discussed in the light of these observations. The question of the autonomic equilibrium comes in for much attention, especially since the distribution of leukocytes in the various vascular areas of the body has been worked out as a readily demonstrable criterion for relative functional activity or rest. The chemical studies lead to the conclusion that with cellular activity the calcium concentration of the cell membrane is diminished; that while calcium leaves the cell, the intracellular concentration of potassium increases; the cell membrane is increased in permeability resulting in hydration of the proteins; for the organ as a whole, vascular dilatation and relative leukocytosis complete the status of activity. According to the nervous impulses bringing about this condition the authors name it the parasympathetic status, as contrasted with the sympathetic status or relative tissue rest. With these criteria for functional rest and activity, two large groups of organs are found to be in delicate equilibrium—presumably maintained by autonomic control: in this "splanchnoperipheral balance," the skin and

1. Petersen, W. F., and Levinson, S. A.: The Skin Reactions, Blood Chemistry and Physical Status of "Normal" Men and of Clinical Patients, Arch. Path. **9**: 151 (Jan., part 2) 1930.

the respiratory and urinary organs represent the "peripheral" entity, as contrasted with the intraperitoneal organs. The "balance" between these two systems expresses the fact that functional activity in one automatically causes inactivity (anemia, depression of cellular activity, increased susceptibility to infections) in the other. This concept has opened fundamentally new roads of attack to such elementary clinical problems as chill, herpes, and seasonal and climatic variations in the susceptibility to intestinal and respiratory infections.

In exophthalmic patients a marked increase in capillary permeability was noted, which is not necessarily related to the increased basal metabolism; in fact, it is found similarly in "nervous patients" with normal metabolic rate. The authors therefore believe with previous writers that two factors are operative in exophthalmic goiter: "one, an underlying change in tissue reactivity, and another which is distinctly related to the calorigenic effect of the thyroid secretion." This view is strongly supported by the observation that after thyroidectomy the metabolic rate may return to normal while the abnormal skin reactions (such as increased capillary permeability) may remain unaltered. In other words, operation cures the symptoms due to the hypersecretion but it cannot cure the prominent constitutional factor in exophthalmic goiter.

Mental instability in the "nervous patient" may "result from changes in the ionic equilibrium and from changes in the capillary permeability." Conversely, mental stress may bring about the identical tissue changes.

In the group of tuberculous patients, the vascular response to epinephrine is lessened. With clinically advancing disease, the capillary permeability is increased; in healed tuberculosis it is decreased. The least resistant group (that is, the group with shortest survival time) showed, in addition to high permeability, a decrease in blood calcium and cholesterol and higher globulin content. The autonomic status of the patient—varying during the ups and downs of the disease—is given dominant importance. The well known fluctuations of the cutaneous tuberculin reaction are explained entirely on this nonspecific basis. The authors "have come to consider resistance without reference to specific concepts." Although one may mention excellent evidence in the light of which this radical departure may be criticized, it must be admitted that focusing the attention on the autonomic vascular processes opens new and encouraging therapeutic possibilities. These are discussed on the basis of a few tentative trials which would indicate that therapeutic efforts should be directed to decreasing the capillary permeability of tuberculous patients.

At this time it is possible to mention only a few of the most easily crystallizable facts out of an enormously rich material. It is only fair to mention that many of the data show overlapping, that some of the correlations are more suggestive than clearly convincing, and that these are fairly represented as such by the authors. The significance of the work lies more in showing new problems and new points of view in regard to old problems than in solution and finality.

THERAPEUTIC POTENTIALITIES OF "MUSTARD GAS"

From time to time hopes are still entertained for some possible usefulness in medicine of "mustard gas," chemically known as dichlorethylsulphide. Thus British and German investigators report that the dermal application of dichlorethylsulphide will prevent the development of the experimental cancer of tars.[1] The prevention is said to be limited. In the skin, local tissue changes are invoked through a highly efficient lipoid solubility and consequent cellular penetration of the compound. These changes, it is asserted,[2] result from an intracellular hydrolysis of the compound with liberation of hydrochloric acid; in other words, an intracellular acidosis and all that this connotes. The skin changes thus caused may be deep and resemble the burns from roentgen rays or radium.[3] Accordingly, the protective action against pathologic growths of the skin, or destructive action on them, may have a definite objective basis. The compound might render the skin unfit soil for growths, but possibly only at the expense of considerable destruction of tissue.

When the concentration of the compound is greatly reduced, benefits of another kind are reported. Forster [4] of the Pharmacologic Institute at Würzburg has reported that dichlorethylsulphide in high dilution was the most efficient hair growth promoter of a considerable number of agents tried. Quantitative estimations of hair growth on shaved cats, treated locally with concentrations of 0.01 per cent of the compound in 50 per cent alcohol containing 2 per cent of glycerin, showed a much greater production of hair than with tincture of cantharides, 1 per cent mustard oil, an ointment containing 33 per cent of cholesterol, a hydrolysate of hair, tincture of cinchona, and certain proprietaries containing the so-called hair ferment and other constituents. The hair grew not only more abundantly but also longer than in the untreated control areas. Impure yellow petrolatum, but not the pure white product, was next in efficiency to dichlorethylsulphide, this being attributed to impurities acting as irritants. Fifty per cent alcohol was only moderately effective. The mechanism of the beneficial action of dichlorethylsulphide, itself a highly destructive and powerful poison, was attributed to irritation, which resulted in improvement of the local circulation to the hair. The latter

1. Science News, Sept. 12, 1930.
2. Lynch, V.; Smith, H. W., and Marshall, E. K., Jr.: J. Pharmacol. & Exper. Therap. **12**: 265 (Dec.) 1918. Smith, H. W.; Clowes, G. H. A., and Marshall, E. K., Jr.: Ibid. **13**: 1 (April) 1919. Lillie, R. S.; Clowes, G. H. A., and Chambers, R.: Ibid. **14**: 75 (Oct.) 1919.
3. Warthin, A. S., and Weller, C. V.: J. Lab. & Clin. Med. **4**: 229, 265 (Feb.), 785, 1919.
4. Forster: Arch. f. exper. Path. u. Pharmakol. **144**: 363, 1929.

occurs also as the result of massage, a mechanical form of irritation, and Forster suggests that this could be reinforced with chemical irritation. However, when the irritation was marked enough to cause inflammation and excoriation, as was the case after the application of oil of turpentine and the tinctures of cantharides and capsicum, Forster found a diminution or inhibition of hair growth, due apparently to injuries. The same might occur after injudicious application of a mustard gas tonic.

Lest the results of this interesting research on hair tonics in felines arouse premature hopes in the bald and near bald, it should be mentioned that not all shaved and bald skins responded equally well. In fact, those of guinea-pigs, rats, mice, rabbits and pigeons were decidedly unfit or unresponsive. Nor are all "war gases" necessarily effective, for the German cats, in Forster's hands, frankly declined to respond to the much vaunted "war gas" of the Allies, chlorvinyldichlorarsine or "lewisite." No reasons for this curious difference are given, but it is to be hoped that the considerations were not merely patriotic or commercial.

COMMERCIALLY PREPARED INFANT FOODS

One of the unmistakable characteristics of present-day infant feeding is the use of a large variety of food products to replace or supplement human milk or the simpler modifications of cow's milk that were formerly depended on almost universally. The number of brands of proprietary products is bewildering; their respective virtues are extolled in terms of the latest discoveries in the science of nutrition. The commercially prepared infant foods on the market today include several distinct types. The group represented by powdered, evaporated and condensed milks is almost self-explanatory. The unsweetened milks may be ordinary whole milk without any modification other than the removal of water or they may have been partially skimmed. The milk in either case has been unmodified by the addition of any special foreign ingredient. Of greater novelty are the so-called reconstructed baby foods. A recent technical bulletin [1] describes them as especially compounded for babies under one year of age and to be used to augment, or in place of, breast milk. They are known as reconstructed infant foods because, when redissolved in the proportion designated by the attending physician, they have many of the diet qualities of milk but contain additional easily digested ingredients. These ingredients are alleged to be desirable for the baby's growth and development and are added to meet certain definite digestive and nutritive requirements. These reconstructed infant foods are made up generally of powdered milk, cod liver oil and sugar in addition to the milk sugar already present, as well as certain inorganic substances which are intended to make the mixture closely resemble breast milk. "Milk modifiers" are commercially prepared infant foods intended to augment the milk formula with ingredients that include certain sugars, vitamins and inorganic nutrients. "Protein milk" and certain casein compounds are used in pathologic conditions, notably in types of diarrhea in which carbohydrates are not well tolerated by the infant. To these categories may be added the acidified milks, notably lactic acid milk.

The choice of these foods and the actual necessity for their provision is a problem to be decided in general by the individual physician for the individual patient. Regardless of the soundness of the procedures from the standpoint of the physiology of nutrition and growth, it is imperative, however, that commercial infant foods shall exhibit proper sanitary qualities. The standards of acceptability have recently been outlined.[1] The mother has a right to expect and should feel that the food being purchased is clean. "Clean" in this connection should include freedom from any foreign material of an objectionable nature, such as dust particles, dirt, or any other material that may detract from the palatability as well as the sanitary quality of the food. The baby food should in addition be produced from acceptable raw products, and the manufacture should be carried out under clean conditions. In addition to being clean, such foods should be free from harmful bacteria. Such micro-organisms should be carefully excluded. Finally, it may be rightfully expected that infant foods should contain no more than a minimum number of bacteria, even though the bacteria present may be of a harmless nature. The presence of a large number of bacteria in the final product generally indicates that the supervision of the manufacturer has been lax at some point in the processing. A low bacterial count is generally taken to mean that a strict sanitary supervision has been maintained throughout all the different steps in the processing of the infant food. It is perhaps unduly meticulous to expect any condition approaching microbial sterility in such products. The requirements are sometimes formulated beyond reasonable possibilities so far as the content of harmless bacteria—and there are such—is concerned.

Investigations made by Dorner [2] at the New York State Agricultural Experiment Station at Geneva of milk drawn aseptically from a large number of cows in dairy herds showed the lowest count of bacteria to be about 4,000 per cubic centimeter, with an average of 7,500. The bacteriologists who have studied the relative sterility of aseptically drawn milk report highly variable observations. Apparently healthy udders may yield milk with a low count while others produce milk with a high count. According to Dorner it appears to be a rather difficult task to produce a milk yielding a count of only 10,000 per cubic centimeter, the arbi-

1. Hucker, G. J., and Hucker, Alice M.: Commercially Prepared Infant Foods, Bull. 584, New York Agric. Exp. Station, October, 1930.

2. Dorner, W.: The Bacterial Flora of Aseptically Drawn Milk, Technical Bull. 165, New York Agric. Exp. Station, July, 1930.

trarily fixed standard for certified milk. In view of these limitations it is gratifying to learn that recent investigations of commercially prepared infant foods indicate that practically all products on the market at the present time meet high sanitary standards. Manufacturers are apparently devoting their efforts to market products prepared under the best possible sanitary conditions.

Current Comment

THE POPULAR SCIENCE MONTHLY'S PRIZE AWARD

The medical profession will rejoice in the recent announcement that the first annual prize award of $10,000 presented by the *Popular Science Monthly* is to be divided between Dr. George H. Whipple of the University of Rochester School of Medicine and Dentistry and Dr. George R. Minot of the Harvard University Medical School. The citation is "for the current achievement in science of greatest benefit to the public." To Dr. Whipple is due a series of investigations dealing with the regeneration of the blood.[1] They were concerned with simple anemia in dogs, the loss of blood being produced by hemorrhage. The investigator was soon convinced that the amount of regeneration of hemoglobin in the body could be modified at will by control of the diet. This was a departure from the widespread assumption that the most important factor in the relief of secondary anemias is the administration of iron in one compound or another. Whipple and his associates established an effective experimental method of study—always a desideratum; and as early as 1925 they announced that in severe simple anemias the feeding of liver remains the most potent factor for the sustained production of hemoglobin and red cells.[2] Later they admitted that in severe anemia of long standing the value of iron therapy cannot be disputed. Their conclusions were the outcome of prolonged trials, which led Whipple to remark that "the history of anemia treatment with drugs is indeed a tale to make the judicious grieve." Minot's contributions are probably somewhat more familiar because they have succeeded in prolonging life so effectively in cases of pernicious anemia, once an almost hopeless problem to the practitioner. The first announcement indicating that in pernicious anemia the feeding of liver produces an increased concentration of reticulocytes and mature erythrocytes in the peripheral blood was made in THE JOURNAL.[3] Since then persistent studies have made it possible to employ "refined" liver extracts in the dietotherapy of pernicious anemia; and recently the active principle has been prepared in a pure state and its chemical identity made probable.[4] This is truly a thrilling story of diligent protracted research by prepared minds in the domain of hematology.

1. The fundamental papers have been published in the American Journal of Physiology beginning **72**: 395 (May) 1925; see also **53**: 167 (Sept.) 1920.
2. Compare Robscheit-Robbins, F. S., and Whipple, G. H.: Am. J. Physiol. **72**: 408 (May) 1925.
3. Minot, G. R., and Murphy, W. P.: Treatment of Pernicious Anemia by a Special Diet, J. A. M. A. **87**: 470 (Aug. 14) 1926.
4. Nature of the Substance in Liver Active in Pernicious Anemia, Current Comment, J. A. M. A. **95**: 1509 (Nov. 15) 1930.

THE PRESIDENTIAL FINGER SLIPS

Norman Baker of Muscatine, Iowa, who claims to treat successfully cancer, goiter, varicose veins and other diseases by some secret preparations, who uses his radio station to sell cigars and get patients, who attacks most of the reputable educational institutions and scientific organizations of his state and of the nation with billingsgate and vilification, found it necessary to start a newspaper to spread his views because the reputable press of his state exposed his quackery. By some of the strange influences known only to politicians, President Herbert Hoover was induced to apply to a pushbutton in Washington the presidential digit, thereby giving to the presses in Muscatine the electrical juice necessary to induce motion, whereby inked rollers applied to paper aided still further the dissemination of Baker's notions and nostrums. As an engineering feat, the demonstration must have given joy to the presidential cerebrum. As a demonstration of presidential judgment and a sense of the fitness of things, it gave acute pain to the press, the physicians and most of the people of Iowa. Somewhere, somehow, some secretary succeeded in precipitating the President of the United States into a situation that awaits explanations.

THE FOG DEATHS IN BELGIUM

Week-end medical sensations sprung on American audiences as news from abroad are no novelty in the American press. The fear of the fog deaths is no doubt still fresh in the minds of many people. Seldom has a more dramatic announcement been made than the account of the spread of the fog in the valley of the Meuse, the fleeing of the people, the deaths of the aged, and the terrible possibility of poison gas. It was a story to delight the heart of an editor. Leg men rushed here and there gathering interviews from noted climatologists, bacteriologists, health officials, smoke inspectors, chemists and toxicologists. In Chicago the well known cloud of smoke was visualized as a possible menace. The majority of experts who were consulted were convinced that it was not possible for any poison gas or any products from any factory to affect people in such a manner as to bring about deaths of the nature of those reported. According to an announcement recently published in the *Lancet* the ministry of health of London has been notified by several French and Belgian health authorities that the deaths were not due to any communicable disease; neither were they due to any poison gas. The sixty-four deaths that occurred were of old people primarily. There were five deaths in one village, two of them in people who had been long sufferers from heart disease, one from tuberculosis, one from asthma and one from obesity. Apparently the deaths were due to nothing else but a sudden severe spell of fog and cold. The British authorities point out that the valley of the Meuse at the point at which the deaths occurred is deep and sheltered and that cold air settles at the bottom of such a valley. A fog itself will not appreciably affect the rate of deaths from diseases of the lungs, but if the fog is associated with a low temperature there is a sudden sharp rise in the death

rate of adults from respiratory diseases. Such a sequence of events has occurred at various times in Great Britain. The British authorities assert that during the winter every city is in danger of a catastrophe if a combination of severe cold, fog and still air occurs over a period of several days. This apparently was what happened in the valley of the Meuse with the resultant death of a considerable number of aged persons in a short period of time.

FIRST AID BY THE MANUFACTURER

Perhaps merely because it was the holiday season and the manufacturers wish to remind physicians of their helpfulness, doctors received during the Christmas season a copy of the pamphlet entitled "First Aid in Emergencies," prepared by McKesson and Robbins for circulation to the public. It is not surprising to find from consultation of this pamphlet that first aid covers a wide variety of conditions and that apparently McKesson and Robbins have developed something for each of these conditions. Thus, anemia is listed among conditions demanding first aid and the patient is given full instructions for its control. In addition, biliousness and liver trouble, Bright's disease, diabetes, eczema, gout, rheumatism and tuberculosis are among the conditions demanding first aid. Indeed, the realm of first aid can even be made to include the maternity state and similar unexpected conditions. If the patient takes the advice of McKesson and Robbins, he will stock his family medicine chest with preparations they manufacture, including laxatives, rectal ointments, safe treatments for colds and coughs, tablets for gout and rheumatism, and a good many other preparations. True, the book mentions in various places the desirability of calling a physician, but the patient is encouraged to take a chance. The Hollywood diet is given in toto, with the suggestion that many physicians disapprove of it but that a number of persons have been benefited by its use, so that the patient can try it and drop it if he finds it does not work. This pamphlet represents one of the worst phases of the proprietary medicine business. It is no credit to McKesson and Robbins. It is liable to do both the public and the medical profession more harm than good.

THE HOSPITAL LIBRARY

During the past few years, more and more attention has been given to the question of the establishment of general libraries in hospitals with a view to the possible therapeutic effects of reading by the patients. No longer is it necessary to emphasize the relationship of the mind to the body and the necessity for paying some attention to mental aspects of disease. The interest of librarians has been aroused, and already numerous large hospitals, including veterans' hospitals, have special departments for this service, with a full time employee in charge. In a recent publication, Sir Bruce Bruce-Porter [1] points out the various aspects of the subject that are arousing attention in England. He emphasizes the necessity for having a really good room, proper bookcases, a librarian and some study by the physician of the therapeutic literary needs of his patients. The selection of fiction for a person who is ill is a difficult task. Several recent publications in the field of tuberculosis are so morbid that they would unquestionably have a severe reaction on the patient; the patient with hypothyroidism needs books with satisfying conclusions; persons with mental disturbances must naturally avoid religious arguments, sex questions and volumes dealing with suicide. Fortunately, librarians have begun to study the subject scientifically. Carefully recorded experiences within the next few years will yield a sufficient number of facts of value to permit the drawing of conclusions and the making of reasonable suggestions.

1. Bruce-Porter: The Need for Libraries in Hospitals as Part of the Scheme of Curative Medicine, J. State Med. **38**: 710 (Dec.) 1930.

Association News

MEDICAL SALON IN PERSHING HALL

The total subscription for the Medical Salon in Pershing Hall up to the time of going to press on Monday, December 29, is $775. It will be necessary for physicians to subscribe more readily and, indeed, for a far greater number of physicians to subscribe, if the $10,000 required is to be made available shortly. It is hoped that every one who has not yet subscribed and who intends to do so will send immediately at least $1 or will endeavor to have a group subscription made by his county medical society, hospital staff, or other medical organization. Address Pershing Memorial Fund, American Medical Association, 535 North Dearborn Street, Chicago. The list of subscribers for the current week follows:

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Moses Behrend, M.D., Philadelphia
C. V. Martin, M.D., Maryville, Mo.
Ernest K. Stratton, M.D., San Francisco
George L. Krieger, M.D., New Kensington, Pa.
S. A. Slater, M.D., Worthington, Minn.
D. C. Lindley, M.D., New Castle, Pa.
E. D. Edwards, M.D., St. Louis
W. E. Shastid, M.D., Pittsfield, Ill.
H. C. Bumpus, Jr., M.D., Rochester, Minn.
Margaret H. Bynon, M.D., North Madison, Ind.
Richard E. Yellott, M.D., Benson, Ariz.
Frank S. Bowman, M.D., Philadelphia
Bina Seymour, M.D., Springfield, Mass.
James A. Welty, M.D., Oil City, Pa.
J. R. Plummer, M.D., Deemer, Miss.
Berlin B. Nicholson, M.D., Parkersburg, W. Va.
William Thorndike, M.D., Milwaukee
A. T. Horsman, M.D., Devils Lake, N. D.
H. C. Merker, M.D., Chicago
C. D. Gamble, M.D., Lima, Ohio

THE PHILADELPHIA SESSION

Announcement of Exhibit under Auspices of the Section on Nervous and Mental Diseases

The officers of the Section on Nervous and Mental Diseases have authorized a section exhibit in the Scientific Exhibit at the Philadelphia meeting, June 8-12. The members of the Committee on Section Exhibit are Earl D. Bond, M.D., Philadelphia; Groves B. Smith, M.D., Godfrey, Ill., and Thomas J. Heldt, M.D., chairman, Detroit.

For the purpose of preparing a creditable and well arranged section exhibit, the committee suggests the following topics:

1. Graphic presentation of psychiatric conditions and diseases with emphasis on therapeutic management.
2. Graphic delineation of neurologic problems, syndromes, studies and experimentations.
3. Selected exhibits of educational and research character in neurology, psychiatry, mental hygiene, child guidance and closely allied fields.

Members of the specialty are asked to take an inventory of the materials that might illustrate the foregoing topics or other subjects of interest not only to this section but to the profession as well and communicate with the committee chairman, Dr. Thomas J. Heldt, Henry Ford Hospital, Detroit. Applications must be made on the regular form, which is the one required

by the A. M. A. Committee on Scientific Exhibit. A circular letter giving information concerning this exhibit, together with the usual application blank, has been mailed to those who have registered in the section during the last three years. Those who have not registered in this section but who are interested in such an exhibit may obtain a circular letter and application blank by sending a request to Dr. Heldt, or to Director, Scientific Exhibit, 535 North Dearborn Street, Chicago. Applications should be filed not later than February 10 with Dr. Heldt.

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 10 a. m. on Monday, 10:15 on Tuesday, 10:45 on Thursday and 10 on Saturday, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week is as follows:

January 5. The Ravings of a Health Crank in Reverse.
January 6. Metals That We Eat.
January 8. Metals That We Eat.
January 10. The High Cost of Personal Neglect.

Five minute health talks may be heard over the Columbia Broadcasting System daily except Sundays and holidays, from 12 to 12:05 p. m.

The program for the week is as follows:

January 5. Keeping House by Units.
January 6. Tidiness for Kitchen Tools.
January 7. Bathing the Family.
January 8. A Clean Sweep from Home to School.
January 9. Creating in Childhood a Conscience for Cleanliness.
January 10. Believe It or Not.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Louis L. Robinson has been appointed city health officer of Corte Madera to succeed Dr. A. F. Roberts. ——Dr. Robert S. Northrup, Napa, has been appointed health officer of Napa County to succeed Dr. Laurence Welti, who held the office for many years.

Licenses Revoked and Suspended.—The California State Board of Medical Examiners revoked the license to practice medicine of Dr. William V. Whitmore, October 23, on account of a narcotic conviction. The license of Dr. Fred H. Van Tassell to practice as a physician and surgeon in the state was suspended by the board, October 21, following a hearing on narcotic derelictions. THE JOURNAL, December 6, erroneously reported that Dr. Van Tassell had been placed on probation for one year.

Graduate Course on Heart Disease.—Three hundred and fifty-six physicians from sixty-five California cities attended a three-day graduate course on heart disease arranged by the heart committee of the San Francisco County Medical Society, December 9-11. Among the speakers were Drs. Evelyn M. Anderson, on "Classification of Heart Disease"; Gordon E. Hein, "Interpretations of Symptoms in Heart Disease"; John J. Sampson, "Organization of a Cardiac Clinic"; Ina M. Richter, "Heart Disease and Pregnancy"; John Lagan, "Interpretation of Interesting Electrocardiograms"; William J. Kerr, "Use of Quinidine in Treatment of Cardiac Irregularities"; Eugene S. Kilgore, "Syphilitic Aortitis," and Ann P. Purdy, "After-Care in Rheumatic Fever." Drs. Arthur L. Bloomfield, William Dock and John K. Lewis demonstrated various types of heart disease and Major William C. Munly presided at a discussion of common types of heart disease.

Society News.—The Contra Costa County Medical Society, Richmond, was addressed, October 14, by Dr. John W. Sherrick, Oakland, on "Toxemias of Pregnancy."——Dr. George K. Rhodes, San Francisco, addressed the Napa County Medical Society, November 1, on "Perinephric Abscess of Acute Hematogenous Origin."——The Orange County Medical Society, Santa Ana, was addressed, November 4, by Dr. Edwin D. Kilbourne, on "Cooperation in the Early Diagnosis of Surgical Conditions." ——Dr. Hans Lisser spoke on clinical endocrinology before a recent meeting of the Sacramento Society for Medical Improvement. —— The Santa Barbara County Medical Society was addressed, November 10, by Dr. John F. Van Paing on "Malarial Therapy in Neurosyphilis."——The San Francisco County Medical Society was addressed at its annual meeting, December 9, by Drs. Morris H. Silverberg and Frederick Eberson on "Urine Test for Early Pregnancy: Report of 125 Cases." ——Twenty-nine past presidents of the Los Angeles County Medical Society, who are still in active practice out of a group of fifty-six who have held the office, were guests of honor at a ball, December 7.——Drs. Harry E. Alderson and Stuart C. Way, San Francisco, addressed the San Joaquin County Medical Society, at Stockton, December 4, on dermatologic subjects, illustrated with motion pictures of cases from the clinic of Stanford University Medical School. The same program was presented before the Fresno County Medical Society, November 4.

DISTRICT OF COLUMBIA

Dr. O'Malley Honored.—Dr. Mary O'Malley was recently entertained by the medical staff of St. Elizabeth's Hospital, Washington, on the twenty-fifth anniversary of her service at the hospital. Dr. O'Malley has been clinical director of the women's service since 1917. Her chief investigations and research have been on the psychoses caused by carbon monoxide and on brominism. Before coming to St. Elizabeth's, Dr. O'Malley had served on the staff of the state hospital for nervous and mental diseases at Binghamton, N. Y.

GEORGIA

Personal. — Dr. Richard Binion, Milledgeville, has been appointed by Governor Hardman a member of the board of trustees for the Georgia State Sanitarium, Milledgeville.—— Dr. Fletcher H. Brooks, Baltimore, surgeon lieutenant commander, medical corps, U. S. Navy, retired, has been appointed director of the John D. Archbold Memorial Hospital, Thomasville, to succeed Col. James L. Bevans, who has resigned. Dr. Brooks will take up the duties, April 1.

ILLINOIS

Society News.—Dr. Harry A. Singer, Chicago, addressed the La Salle County Medical Society, December 11, among others, on "Cook County Hospital Methods in the Diagnosis of Gastric and Duodenal Ulcer."——Dr. John Glenn Young, Pontiac, was elected president of the North Central Illinois Medical Association, at its fifty-seventh annual meeting, December 9, at Peoria. Drs. Arthur Sprenger, Peoria, and E. C. Cook, Mendota, were elected vice presidents, and Dr. George A. Dicus, Streator, secretary-treasurer. Dr. Edward Starr Judd, Rochester, Minn., President-Elect of the American Medical Association, addressed the association at its annual banquet on surgery of the biliary tract.

Chicago

Personal.—Dr. Pashupati J. Sarma has resigned as associate in the surgical department of Loyola University School of Medicine and accepted a similar position at the University of Illinois College of Medicine.——Dr. Calvin T. Hood was recently honored by the Garfield Park Hospital officials on completion of thirty-nine years of service with that institution. ——Dr. Ralph C. Hamill was recently elected president of the Illinois Society for Mental Hygiene. —— Dr. Margaret W. Gerard has resigned as psychiatrist at the Institute for Juvenile Research to accept an appointment on the staff of the student health service at the University of Chicago.

Society News.—Dr. Gerald Webb of Colorado Springs will speak before the Chicago Tuberculosis Society, January 8, on "Laennec."——A symposium on gallbladder disease was conducted by Northwestern University Medical School, December 17, before the Chicago Medical Society. Physicians who took part in the discussion were Drs. Andrew C. Ivy, James P. Simonds, James T. Case, Charles A. Elliott and Harry M. Richter. —— The Chicago Ophthalmological Society was addressed, December 15, by Dr. Samuel V. Abraham on "Bell's Phenomenon and the Fallacy of the Occlusion Test." —— Dr. Russell M. Wilder addressed the Chicago Society of Internal Medicine, December 15, on "Innocent Glycosurias." —— Carlos I. Reed, Ph.D., addressed the Medical History Club of the University of Illinois, December 17, on "Dr. William

Beaumont"; the art department of the University of Illinois College of Medicine has on display in the library an exhibit on "The Dance of Death."

KENTUCKY

Society News.—The Southwestern Kentucky Medical Association was addressed at Mayfield, October 28, by Drs. Virgil E. Simpson, Louisville, and Elbert W. Jackson, Paducah, on "Modern Methods of Handling the Diabetic Patient" and "Diagnostic Value of Cystoscopic Examinations," respectively. —— Dr. Virgil E. Simpson, Louisville, addressed the Tri-County Medical Society (Taylor, Green and Adair counties), December 4, on "Mendelian Law in Relation to Medicine." ——A permanent health unit for Barren County was assured when the fiscal court voted, Dec. 7, 1930, to allow $1,250 toward its support. The remainder of the annual cost, estimated at $10,000, is guaranteed by the Commonwealth Fund and the state of Kentucky. The unit was to have begun functioning January 1.

MAINE

Society News.—Dr. Sidney D. Kramer, Boston, addressed the Oxford County Medical Association, October 20, at Bethel, on "Preparalytic Diagnosis and Treatment of Anterior Poliomyelitis." —— The Washington County Medical Society was addressed, October 16, at Dennysville by Drs. Ward J. Renwick, Auburn, on "Alkaline Ash Diet"; Julius Gottlieb, Lewiston, "Classification of Kidney Disease," and Eugene H. Drake, Portland, "Drug Treatment of Heart Disease."

Unlicensed Practitioner Fined.—Frederick Charles Quitzreau, who has been practicing medicine in Solon since about Feb. 1, 1930, was recently fined $100 and costs on a charge of practicing without a license. Quitzreau applied for a license, but failed in the examinations held March 11-12, 1930. At that time he presented a certificate which he said was a diploma issued to him in 1908 by the University of Berlin, conferring on him the degree of doctor of medicine. Inquiry of the University of Berlin revealed that no person of that name had studied there from 1906 to 1925. Records of the American Medical Association show that one F. C. Quitzreau failed in an examination before the Illinois board of registration in 1922 and that he was convicted, Oct. 20, 1922, on charges of practicing in Illinois without a license, and was fined $100 and costs (THE JOURNAL, Oct. 28, 1922, p. 1525).

Association Protests Dismissal. — The Maine Medical Association has protested against the dismissal by the board of trustees of Dr. Lester Adams, superintendent of the Western Maine Sanatorium, a state institution at Hebron, for seven years. A statement was issued by the president, Dr. Charles B. Sylvester, Portland, and Dr. Philip Webb Davis, secretary, on behalf of the association. In accord with the action of the association, the Penobscot County Medical Society adopted the following resolution:

Resolved, That in the dismissal of Dr. Lester Adams from the medical supervision of the Hebron Sanatorium the Board of Trustees for Maine Sanatoria have forgotten the sole reason for existence of the Maine State Tuberculosis Sanatoria, namely: the care and treatment of the indigent poor of the state afflicted with the disease.

By this action the patient, the state and the public will lose a most efficient officer.

We protest the action of the board and insist that the retaining of Dr. Adams is essential to the welfare of this institution and we petition that a special hearing be afforded representatives of the Maine Medical Association to urge upon the governor and council some course which will result in a reversal of this action.

MICHIGAN

Hospital News.—The Charles Godwin Jennings Hospital, recently completed in Detroit at a cost of $800,000, was opened, November 28. It is a successor to the Detroit Diagnostic Hospital but is organized as a nonprofit corporation governed by a board of trustees. There are forty-two private rooms and twelve double rooms.

Society News.—Dr. Howard Fox, New York, will address a joint meeting of the Wayne County Medical Society and the Detroit Dermatological Society, February 3, on modern treatment of skin diseases.——Dr. Clark D. Brooks, Detroit, spoke on "Diagnosis and Treatment of Commonplace Infections" before the Wayne County Medical Society, December 16.

Campaign Against Cancer.—A state-wide educational campaign against cancer was launched by the cancer committee of the Michigan State Medical Society at a meeting in Detroit, December 4. Lectures throughout the state for both physicians and the public, circulation of educational pamphlets, exhibition of films and statistical surveys of the prevalence of cancer in the state comprise the program adopted by the committee, of which Dr. Charles E. Dutchess, Detroit, is chairman.

MISSOURI

Dr. Gallie to Give Hodgen Lecture. — Dr. William Edward Gallie, professor of surgery and clinical surgery, University of Toronto Faculty of Medicine, Toronto, will deliver the Hodgen Lecture for 1931, January 13, before the St. Louis Medical Society, on "Recent Advances in Transplantation of the Fibrous Tissues."

Hospital News. — The Missouri Methodist and Noyes-Baptist hospitals, St. Joseph, were merged, December 13; the merger entailed the purchase of the Noyes-Baptist Hospital building by the Missouri Methodist Hospital and conversion of the Noyes-Baptist Hospital into a nurses' home. The consolidated institution will retain the name of the Missouri Methodist Hospital.

Society News.—Dr. Hiram Winnett Orr, Lincoln, Neb., addressed the Kansas City Academy of Medicine, December 19, on "Inflammatory Bone Disease."——Among speakers who addressed the Kansas City Society of Ophthalmology and Otolaryngology at the afternoon session, December 18, were: Drs. Otto Jason Dixon, on "Differential Diagnosis of the Three Complications of Chronic Suppurating Otitis Media"; Edwin N. Robertson, Concordia, Kan., "Glaucoma"; Virgil W. McCarty, Kansas City, "Indications for Tonsillectomy in Children," and George E. Bellows, Kansas City, "Management of Certain Phases of Industrial Eye Cases." At an evening session, among other speakers, Dr. William G. Patton, St. Louis, discussed "Local Treatment of Allergic Conditions of the Nose," and Dr. James C. Braswell, Jr., Tulsa, Okla., "Head Noises."—— Dr. George H. Hoxie, Kansas City, conducted a symposium on early diagnosis of tuberculosis at a meeting of the Clay County Medical Society, October 30, at Excelsior Springs.

NEW JERSEY

Health at Trenton. — Telegraphic reports from seventy-eight cities with a total population of 35 million to the U. S. Department of Commerce, for the week ended December 6, indicate that the highest mortality rate (24.6) appears for Trenton, and the rate for the group of cities, 11.9. The rate for Trenton for the corresponding week last year was 18.3, and for the group of cities, 12.8. The annual rate for seventy-eight cities was 11.9 for the forty-nine weeks of 1930, as against a rate of 12.6 for the corresponding weeks of 1929. The rates published in this summary are based on midyear population estimates derived from the 1930 census. Cities whose population was found to be less than was indicated by estimates heretofore used will therefore appear as having a higher death rate than usual, even though there may have been no material increase in the actual number of deaths.

Society News.—Dr. John B. Deaver, Philadelphia, addressed the Atlantic County Medical Society, December 12, on "Operative and Nonoperative Treatment of Surgical Diseases of the Abdomen."——Dr. John M. T. Finney, Baltimore, addressed the Academy of Medicine of Northern New Jersey, November 20, on "Surgery of the Stomach and Duodenum."——Dr. George M. Piersol, Philadelphia, addressed the Atlantic County Medical Society, November 14, at Atlantic City, on "Acute Hepatitis."——Drs. Theodore S. Wilder and Douglas P. Murphy, Philadelphia, demonstrated the Drinker respirator at a meeting of the Burlington County Medical Society, November 12, at Mount Holly. Dr. Samuel Emlen Stokes, Moorestown, read the president's annual address on "What the Medical Society Should Mean to Its Members."——Dr. Stanley P. Reimann, Philadelphia, presented a paper before the Camden County Medical Society, November 4, at Camden, on "Mitosis, Wound Healing and the Sulphydryl Group."——Dr. James T. Rugh, Philadelphia, addressed the Cape May County Medical Society, October 30, at Cape May Court House, on "Focal Infections and Their Interest to the General Practitioner."——Dr. Harrison S. Martland, Newark, addressed the Essex County Medical Society, November 13, at Newark, on "The Medical Examiner's Office: Its Relation to the Profession and to Scientific Medicine."——Dr. Herbert W. Nafey, New Brunswick, presented a paper on "Radium and Its Use in Some Gynecologic Problems" at a meeting of the Middlesex County Medical Society, November 19, at New Brunswick. —— Dr. George H. Lathrope, Newark, addressed the Sussex County Medical Society, November 11, at Sussex, on "Chronic Typhlitis as a Cause of Failure in Operations for Chronic Appendicitis."——Among those who addressed the Passaic County Medical Society, November 13, at Paterson, were Drs. Leon E. De Yoe, on "Large Full Thickness Skin Grafts"; David H. Mendelsohn, "Spreading Gangrenous Infection of Abdominal Wounds," and Frank W. Ash, "Neurofibromatosis."

NEW YORK

New York City

Milk Station Moves.—The Manhattan unit of the Mothers' Milk Bureau of the Children's Welfare Federation opened new quarters at 48 Henry Street, November 14. An increase in the service made necessary the move to larger quarters. More than thirty mothers were registered at the Manhattan unit and eighty babies were supplied with mother's milk in October. During the nine years that the bureau has been in operation more than 15,000 quarts of mother's milk has been collected and 2,000 babies have been reached by the two units —one in Manhattan and one in Brooklyn.

Society News.—Dr. Eugene F. Du Bois will deliver the eighth afternoon lecture before the New York Academy of Medicine, January 16, on "Diet in Disease"; an illustrated lecture under the auspices of the committee on public health relations will be given, January 5, before the academy by Drs. Lemuel Whittington Gorham, Albany, and James Douglas Morgan, Philadelphia, on "The Place of Spas in the Treatment of Chronic Disease."——The Medical Society of the County of Kings was addressed, December 16, by Drs. John Alexander, Ann Arbor, Mich., and Charles H. Frazier, Philadelphia, on "Surgical Treatment of Some Advanced Forms of Pulmonary Tuberculosis," and "Relief of Pain by Neuro-Surgical Methods," respectively.——Dr. Arthur Steindler, Iowa City, will deliver an address at the Hospital for Joint Diseases, January 8, in the hospital auditorium on "Mechanics of Upper Extremity Contractures."——Dr. Alvan L. Barach addressed the Bronx County Medical Society, December 17, on "Therapeutic Use of Oxygen."

In Memory of Dr. Salmon.—A meeting in memory of the late Dr. Thomas W. Salmon, former professor of psychiatry at Columbia University College of Physicians and Surgeons, is to be held, January 10, at the New York Academy of Medicine. A fund of $100,000, subscribed by friends and admirers of Dr. Salmon through a special committee formed shortly after his death in 1927, will be officially presented to the academy of medicine at this meeting as an endowment fund, the income from which will be used to finance an annual lecture or series of lectures in psychiatry and mental hygiene. The administration of the fund will be vested in the New York Academy of Medicine, which will choose each year an outstanding scientific worker in psychiatry or in a related field to deliver a lecture or lectures in New York or other cities under the auspices of the academy of medicine or some other accredited scientific, medical or educational organization. Announcement of the first lecture is to be made at this meeting. Hon. George W. Wickersham, honorary chairman of the Thomas W. Salmon Memorial Committee, will preside and the speakers will be Drs. Louis Casamajor and William L. Russell, and Homer Folks, LL.D.

NORTH CAROLINA

Society News.—Free cancer examination clinics were held recently at the Goldsboro Hospital under the auspices of the American Society for the Control of Cancer, conducted by Dr. Henry B. Ivey, Goldsboro, and physicians of Wayne County.——Dr. Louis Hamman, Baltimore, addressed the Seventh District Medical Society at Concord, on "The Diagnosis of Coronary Occlusion."——The Mecklenburg County Medical Society was addressed, November 18, on "Ruptured Aneurysm of the Circle of Willis" by Dr. James B. Bullitt; Dr. Isaac H. Manning, Chapel Hill, spoke on "Physiology and the Practice of Medicine."——Dr. Mervin C. Myerson, New York, addressed the Buncombe County Medical Society, Asheville, December 1, on "Value of Bronchoscopy in Pulmonary Conditions."

OHIO

Personal.—Dr. Harvey A. Finefrock has been appointed health commissioner of the city of Barberton, succeeding the late Dr. William A. Mansfield, who held the office for twenty-eight years.——Dr. Lorne W. Yule, Cleveland, assistant superintendent of the Cleveland State Hospital, has been appointed superintendent of the new state institution for the feebleminded now under construction at Apple Creek.——Forrest D. McCrea, Ph.D., Cleveland, has been appointed associate professor of physiology and pharmacology at Duke University School of Medicine.

Society Establishes Library.—The Clark County Medical Society, Springfield, recently accepted the offer of the Warder Public Library of a room for its own use. The books of two former members, now deceased, Drs. Robert Rind and Harry Miller, about 700 volumes, have been given to the society as a nucleus for a medical library. All medical journals subscribed for are sent to the library, where they are available to all members of the county medical society. It was reported that the dentists of the city would be asked to cooperate and furnish dental books and magazines. The library will have charge of cataloguing and keeping the books.

Society News.—Drs. Frank Smithies and John W. Nuzum, both of Chicago, conducted clinics, December 8-10, at the DeEtte Harrison Detwiler Memorial Hospital, Wauseon, for the hospital staff, which is composed of the full membership of the Fulton County Medical Society and a number of physicians from adjoining counties. Among the subjects discussed were thyroid disease, the medical and surgical aspects of duodenal ulcer, and biliary tract disease. Dr. Smithies made a public address, December 9, on "What the Public Should Expect from the Hospital and Medical Profession."——Dr. Walter W. Chipman, professor of gynecology and obstetrics at McGill University, Montreal, Canada, addressed the Cleveland Academy of Medicine, December 19, on "John Hunter, Founder of Scientific Surgery."——Dr. David Riesman, Philadelphia, addressed the Columbus Academy of Medicine, December 8, on "Significance of Low and High Blood Pressure."

PENNSYLVANIA

Personal.—Dr. John B. Carrell, Hatboro, after twenty years as editor of the *Bucks County Medical Bulletin*, has resigned. Dr. Allen H. Moore, Doylestown, has been elected his successor.

Society News.—Dr. Israel Bram, Philadelphia, addressed the Delaware County Medical Society, December 11, on "Treatment of Surgical and Nonsurgical Goiter."——Dr. Harry S. Sullivan, Towson, Md., addressed the Allegheny County Medical Society, Pittsburgh, December 16, on the mental hygiene movement.——A symposium on syphilis occupied the program of the Pittsburgh Urological Association, December 8. The speakers, with their subjects, were: Drs. Alexander H. Colwell, "Visceral and Vascular Syphilis"; Frederick M. Jacob, "Differential Diagnosis of Skin Lesions"; Charles H. Henninger, "Neurosyphilis"; Albert J. Bruecken, "Clinical Significance of Reactions," and David P. McCune, McKeesport, "Treatment and Social Management."——The Pittsburgh Academy of Medicine heard a symposium on methods of producing anesthesia, December 9, with the following speakers: Drs. William McElroy, on "Physiology of Anesthesia"; James Wade Elphinstone, "General Considerations of Anesthesia"; Harold A. Kipp, "Avertin Basal Anesthesia" (motion picture demonstration); Thomas L. McCullough, "Anesthesia for Ear, Nose and Throat Work"; Paul Titus, "Anesthesia in Obstetrics" and James W. Robinson, "Spinal Anesthesia."——At the meeting of the Pittsburgh Pediatric Society, December 12, Dr. George J. Feldstein presented a paper on lateral sinus thrombosis.——Dr. William D. Stroud, Philadelphia, addressed the Northampton County Medical Society, December 19, at Easton, on "Cardiovascular Heart Disease as a Problem for the General Practitioner."

TENNESSEE

Hospital News.—The United States Trachoma Hospital, maintained at Knoxville by the U. S. Public Health Service since 1923, is reported closed. Dr. James Edward Smith, medical officer in charge, was to be transferred to the headquarters of the trachoma division of the service at Rolla, Mo.

Society News.—Dr. Henry Carroll Smith, Nashville, discussed "Visual Field Changes in the Affections of the Optic Pathway" at the meeting of the Davidson County Medical Society, December 9; Dr. William D. Haggard, Nashville, addressed the society, December 2, on "Pathological and Surgical Consideration of the Gallbladder."——Dr. Carrol C. Turner, Memphis, spoke on "The Hysterical Patient," and Dr. Benjamin S. Penn, Humboldt, "Common Eye Disorders," at the meeting of the Gibson County Medical Society, December 29.——Dr. James S. McLester, Birmingham, Ala., addressed the Hamilton County Medical Society, November 20, on "Dietary Management of the Nephritic."——Among speakers at the November meeting of the Hardin-Lawrence-Lewis-Perry-Wayne Counties Medical Society, at Savannah, were Drs. Willis C. Campbell, Memphis, on "Affections of the Lower Spine," and George R. Livermore, Memphis, "Pus and Blood in the Urine."

TEXAS

Health at El Paso. — Telegraphic reports to the U. S. Department of Commerce from seventy-eight cities with a total population of 35 million, for the week ended December 13, indicate that the highest mortality rate (17.8) appears for El Paso, and the mortality rate for the group of cities as a whole, 11.6. The mortality rate for El Paso for the corresponding week last year was 19.2 and for the group of cities, 13.3. The annual rate for seventy-eight cities was 11.9 for the fifty weeks of 1930, as against a rate of 12.7 for the corresponding weeks of 1929. The rates published in this summary are based on midyear population estimates derived from the 1930 census. Cities whose population was found to be less than was indicated by estimates heretofore used will therefore appear as having a higher death rate than usual, even though there may have been no material increase in the actual number of deaths.

Society News.—The Texas Association of Obstetricians and Gynecologists held its first independent clinical meeting in Galveston, October 4. Clinics were conducted by Drs. Willard R. Cooke, Julius L. Jinkins and Henry Reid Robinson, all of Galveston. The association voted to establish an annual lecture to be known as the A. D. Payne Lecture, in honor of the late Dr. A. D. Payne, first professor of obstetrics at the University of Texas School of Medicine. Dr. Calvin R. Hannah, Dallas, was elected president and Dr. Robert A. Johnston, Houston, secretary.——The Bexar County Medical Society was addressed, November 6, by Drs. Roy T. Goodwin and Homer T. Wilson, San Antonio, on "Diagnosis of Gallbladder Disease" and "Treatment of Gallbladder Disease," respectively. —— Dr. James J. Barfield, Colorado Springs, Colo., presented a motion picture illustrating heliotherapy in tuberculosis before a recent meeting of the Dallas County Medical Society; Dr. Sam E. Thompson, Kerrville, spoke on "Unusual Roentgenograms of the Chest." —— The El Paso County Medical Society was addressed recently by Drs. William E. Vandevere and Junius Mott Rawlings, El Paso, on "Foreign Bodies in the Air and Food Passages" and "Tracheobronchial Tuberculosis," respectively.—— Among others, Dr. Montelle I. Brown, Mineral Wells, addressed the Palo Pinto County Medical Society, November 3, on "Acute Myelogenous Leukemia."

GENERAL

Ready Response in Paying 1931 Dues.—The colored remittance slip inserted in the December 20 issue of THE JOURNAL has been acted on promptly by thousands of Fellows and subscribers. Every day has brought back to the headquarters offices a large number of these envelop remittance forms enclosing payment for 1931 Fellowships and subscriptions. Those who have not responded are urgently requested to retrieve the colored slip from the December 20 issue of THE JOURNAL, fold it into the form of an envelop, insert check, and drop in the mails. The envelop needs no addressing, no postage. It represents the maximum of convenience in taking care of the dues for 1931.

Examinations for Certification in Obstetrics and Gynecology.—The American Board of Obstetrics and Gynecology, organized in September, 1930, announces that the first written examination for applicants for its certificates of proficiency will be held simultaneously in nineteen cities, March 14, as follows: New York; Chicago; Philadelphia; Toronto, Canada; Indianapolis; Portland, Ore.; Rochester, Minn.; Iowa City; St. Louis; Boston; Ann Arbor, Mich.; Baltimore; Raleigh, N. C.; Atlanta, Ga.; Cincinnati; San Francisco; Grand Forks, N. D.; Denver, and Galveston, Texas. The practical or oral, clinical and laboratory examination will be held in Philadelphia, June 6. Candidates are asked to notify the secretary, Dr. Paul Titus, 1015 Highland Building, Pittsburgh, before February 21, in which city they will present themselves for the written examination in order that credentials may be forwarded to the examiner in advance.

Another Four Weeks of Automobile Fatalities.—The U. S. Department of Commerce announces that, during the four weeks ended November 29, seventy-eight large cities in the United States reported 796 deaths from automobile accidents. This number compares with 839 deaths during the four weeks ended Nov. 30, 1929. Most of these deaths were the result of accidents which occurred within the corporate limits of the city, although some accidents occurred outside the city limits. Considered by four week periods since May, 1925, total deaths from automobile accidents for seventy-eight cities, regardless of place of accident, the lowest total (346) appears for the four week period ended March 27, 1926, and the highest (842) for the four week period ended Nov. 2, 1929. For the fifty-two week periods ended Nov. 29, 1930, and Nov. 30, 1929, the totals for the seventy-eight cities were, respectively, 8,519 and 8,528, which indicate a recent rate of 24.7 per hundred thousand of population as against an earlier rate of 25.2, or a decrease of 2 per cent in the rate during the year. The rates published in this summary are based on midyear population estimates derived from the 1930 census.

Society News. — The Second International Congress of Comparative Pathology will meet in Paris, France, October 14-18, 1931. Research workers and others interested who expect to attend this meeting, and who desire to participate in the proceedings, should address the secretary of the committee for the United States, Dr. George W. McCoy, National Institute of Health, Washington, D. C.——At the annual meeting of the Radiological Society of North America, December 4, Dr. Bundy Allen, Tampa, Fla., was installed as president; Dr. Francis Carter Wood, New York, was made president-elect, and Dr. Isador S. Trostler, Chicago, secretary, reelected. —— Dr. Hugh H. Trout, Roanoke, Va., was elected president of the Southern Surgical Association at its meeting, December 9-11, at Lexington, Ky. Other officers named were: Drs. Charles A. Vance, Lexington, and Frank C. Beall, Fort Worth, Texas, vice presidents; Robert L. Payne, Norfolk, Va., secretary, reelected; Julius H. Taylor, Columbia, S. C., treasurer. White Sulphur Springs, Va., was chosen for the 1931 place of meeting. Among the speakers were: Drs. Daniel F. Jones, Boston, on "Carcinoma of the Colon and Rectum"; Charles H. Mayo, Rochester, Minn., "Carcinoma of the Cervical Stump Following Subtotal Hysterectomy"; Charles H. Watt, Thomasville, Ga., "Retrograde Removal of Ureteral Calculi." The association visited the home and grave of Dr. Ephraim McDowell at Danville, Ky., December 9. Dr. James M. Mason, Birmingham, Ala., retiring president, presided at ceremonies at the grave, and Dr. Francis G. DuBose, Selma, Ala., delivered an address on the life and work of Dr. McDowell.——At the annual meeting of the Western Surgical Association in Kansas City, Mo., Dr. Clarence G. Toland, Los Angeles, was elected president; Drs. Casper F. Hegner, Denver, and Oliver J. Fay, Des Moines, vice presidents, and Dr. Frank R. Teachenor, Kansas City, secretary, reelected. The next annual session will be held in Denver in November, 1931.

Medical Bills in Congress.—S. 255, the Jones-Cooper Maternity and Infancy Bill, is the unfinished business of the Senate. December 17, the Senate by a vote of 74 to 14 refused, on motion of Senator Bingham, Connecticut, to recommit the bill to the Senate Committee on Commerce. December 18, the Senate, by a vote of 66 to 5, defeated an amendment, offered by Senator Tydings, Maryland, to strike from the bill the requirements that the states match the federal allotments and to provide that the federal appropriation be expended under the direction of the surgeon general of the U. S. Public Health Service. S. J. Res. 188, authorizing the surgeon general of the public health service to make a survey of malaria conditions in the United States, has been reported, with amendment (Senate Report 1197). S. 5104, introduced by Senator Copeland, New York, proposes to provide that the Federal Board for Vocational Education shall cooperate with the several states and territories in the care, treatment, education, vocational guidance and placement, and physical rehabilitation of persons below the age of 21 years who have some serious physical defect that may be corrected or improved by orthopedic surgery and medical care. The bill provides that in the selection of persons for treatment only those whose parents are unable to provide adequate treatment shall be selected and that parents may be required to contribute to the expense of such treatment according to their means. S. 5251, introduced by Senator Davis, Pennsylvania, proposes to authorize the administrator of veterans' affairs to convert and reconstruct the United States Veterans' Hospital, numbered 49, at Philadelphia, for use as a diagnostic center. H. R. 14919, introduced by Representative Burdick, Rhode Island, proposes to amend the World War Veterans' Act to provide, among other things, outpatient treatment by the regional offices to veterans of any war since 1897, not dishonorably discharged, without regard to the nature or origin of their disabilities. H. R. 15000, introduced by Representative Schneider, Wisconsin, proposes to provide for the hospitalization, in government hospitals, of persons discharged from the United States Army, Navy or Marine Corps who have contracted tuberculosis in line of duty. H. R. 15067, introduced by Representative Johnston, Missouri, proposes to authorize the erection of a veterans' hospital in the Ozark section of Missouri. H. R. 15078, introduced by Representative Erk, Pennsylvania, proposes to authorize the erection of an addition to the veterans' hospital at Aspinwall, Pa.

Government Services

The Government Needs Physicians

The U. S. Civil Service Commission announces the following open competitive examinations: medical officer, associate medical officer and assistant medical officer (general medicine and surgery). Applications will be rated as received by the civil service commission at Washington, D. C., until June 30, 1931. These examinations are to fill vacancies in the departmental service, veterans' bureau, public health service, Indian service, coast and geodetic survey and Panama Canal service. Competitors will not be required to report for examination at any place, but will be rated on their education and training and on their experience. The general requirement is that applicants must have been graduated with a degree of M.D. from a medical school of recognized standing not more than twenty years prior to the date of making oath to the application. In addition to this, for medical officer one year of hospital service and at least three years' practical experience during the last five years is required. Applicants for associate medical officer must show at least one year of hospital service, and one year of practical experience; those for assistant medical officer must have had at least one year of practice or internship. Full information may be obtained from the U. S. Civil Service Commission, Washington, D. C., or from the secretary of the U. S. Civil Service Board of Examiners at the postoffice or customhouse in any city.

Dr. Bauer Resigns from Aeronautic Service

Dr. Louis H. Bauer, medical director, Aeronautics Branch, U. S. Department of Commerce, since its organization in 1927, has resigned to engage in private practice in Hempstead, Long Island, it is reported. He will continue as a consultant. Dr. Harold J. Cooper, assistant medical director, has been appointed to succeed Dr. Bauer, and Dr. Eldridge S. Adams, San Antonio, Texas, will succeed Dr. Cooper. Dr. Bauer is said to have established the organization for the physical examination of applicants for department of commerce pilot licenses and for the periodic physical examinations given to holders of licenses.

Report of Surgeon General of Navy

The annual report of the surgeon general of the U. S. Navy shows that 394 deaths occurred during the calendar year 1929, making a death rate from all causes of 3.36 per thousand. The rate was lower than for any of the preceding five years except 1926, when it was 3.03 per thousand. About 10 per cent of the deaths occurred among expeditionary forces in Nicaragua, China and Haiti. There were no serious disasters during the calendar year 1929, although seven lives were lost in two minor accidents. The death rate from drowning, always a leading cause of death in the navy, was lower than the median of the previous five years, the total number of drownings being fifty. Aeronautics was responsible for twenty-six deaths. The prevalence of communicable diseases was unusually low; cerebrospinal fever, which, in recent years, has stood among the leading causes of death, decreased from 75 per hundred thousand in 1928 to 57 per hundred thousand in 1929. Fourteen deaths were attributed to influenza in 1929, as compared with sixteen in 1928. There were 945,241 days of treatment in naval hospitals, excluding 51,143 sick days on the hospital ships *Relief* and *Mercy*. The total number of treatment days represents a daily average of 2.2 per cent of navy personnel under treatment in naval hospitals, and an average of eight hospital days for all persons in the navy. The admission rate from all causes, all ships in commission, was 529 per thousand as compared with 553 for the previous five year median; 1,613 enlisted men of the navy and 347 enlisted men of the marine corps were invalided from the service in 1929 for all causes. The only epidemic in the forces afloat during 1929 was that of scarlet fever on the U. S. S. *New York;* where between March 1 and 22, there were eighty-two cases. Eighty-one new medical officers were commissioned, while fifty-three were separated from the service—thirty-four by resignation, fourteen by retirement, four by death and one was dismissed. Of the 264 candidates authorized to appear for examination for appointment in the navy medical corps in January, eighty-four were found qualified, but three did not accept commissions. Need of new construction to replace temporary "war-time" structures in use, is particularly urgent at Philadelphia, Washington, Great Lakes and Quantico.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 6, 1930.

Medical Socialists Bring Forward Their Scheme

In the letter published in THE JOURNAL, Aug. 16, 1930, it was explained that the British Medical Association was advocating a deeper plunge into medical socialism in the form of extension of the national health insurance act to all classes, not because either the profession or the association desires such a change but because in the present socialistic phase of British politics it is regarded as inevitable and should take place on lines acceptable to the profession. But at the same time there is in the profession a body of true socialists who want socialism in medicine as well as in everything else and in medicine something more thoroughgoing than the scheme of the British Medical Association. They have formed an organization known as the National Medical Service Association and though their number is small their influence with the present socialist government must be considerable. Like the British Medical Association, they have produced their scheme. They of course welcome the advance of the greater association and "endorse many of the principles" of its scheme. But instead of the physicians still retaining some autonomy and merely contracting with the government to give certain services, the National Medical Service Association states that the ideal medical service would be staffed by full-time physicians who would work from medical centers. Their services would be given free to all who need them and they would be responsible for the maintenance of health as well as the treatment of disease. They would have at their disposal specialists, hospitals, convalescent homes, pathologic services, indeed anything necessary for the prevention and cure of disease. They agree with the British Medical Association that "the general practitioner must still remain the first line of defense" but add: "Unfortunately the public are quite incapable of assessing the real value of medical attention. They can appreciate a good bedside manner and an expensive automobile, and by these the physician is too often judged." They stress the importance of preventing the passing on of patients to assistants and junior partners—"a crying evil of the present panel system." They do not explain how under socialism senior men are to be supplied for every one who wants them or whether the junior men are to be maintained in idleness of semi-idleness until they have become sufficiently matured. No physician is to be responsible for more than a fixed number of persons, say three or four thousand, unless he is prepared to undertake no other work and give his whole time to the service. The approved societies (lodges) are to be eliminated and the service is to be paid for by the community and administered by its representatives. The association considers that it is a drawback of the scheme of the British Medical Association that it continues the present basis of the national health insurance act financed by contributions from the state, employers and employees, for it excludes such persons as hawkers, costermongers, tinkers, small shopkeepers, cottiers and others whose economic position is often far inferior to many persons at present insured.

John Hammond Teacher: A Great Embryologist

John Hammond Teacher, whose name is known all over the medical world through the Teacher-Bryce ovum, has died in Glasgow. Born near that city in 1869, he was educated at the university, from which he graduated in medicine in 1893. He was early attracted to pathology and in 1893 produced a masterly catalogue of the museum left to the university by William Hunter. He conducted researches in pathology in Glasgow and

Vienna, which culminated in his thesis on chorionepithelioma for the degree of M.D., for which he received honors and a gold medal. This thesis is still almost a complete account of the subject, to which little has subsequently been added. He became especially interested in embryology and worked in association with Prof. T. H. Bryce and Dr. Munro Kerr. Thus was discovered the Teacher-Bryce ovum number 1, which long held the position of the earliest known human ovum and almost all that is now known on the early ovum and its embedding was established. In 1911 he was appointed professor of pathology at Glasgow University, a post which he held at the time of his death. In 1924 another early ovum — Teacher-Bryce number 2—was discovered and described. He collected, classified and criticized an enormous number of preparations of gynecologic pathology and intended to publish his conclusions in the form of a book, which his untimely death will delay. He attended the Winnipeg meeting of the British Medical Association and read an important paper on "The Normal Structure of Endometrium and Decidua and the Menstrual Cycle," which by a sad coincidence appears in the same issue of the *British Medical Journal* that announces his death.

The Lowest Infant Death Rate on Record

It is curious that during a period of industrial depression unprecedented in duration in this country the vital statistics have not been detrimentally affected. The registrar-general's return for the third quarter of the present year shows that the infant mortality was only 45 per thousand live births. This rate is 14 per thousand below the average of the preceding third quarters and the lowest ever recorded in any quarter, being 5 below the third quarter of 1927, the lowest formerly reached. The extent to which the infant death rate has declined in this country is shown by the following figures: During the decade 1841-1850 the rate was 153. In the decade 1881-1890 it fell to 142 but rose again to 153 in 1891-1900. At the beginning of the present century a great fall began, which is attributed to the fact that at this time the first group of children from public elementary schools entered on the responsibilities of parenthood. In 1900 the rate was 151; in 1910, 105; in 1920, 80.

Accidents in Coal Mines

In the house of commons Mr. Sutton, a labor member, called attention to the accidents in coal mines. He gave official figures showing that 985 persons working underground had been killed last year, an increase of 100 on the previous year. The number injured was 162,230, an increase of 13,098. For the ten months of 1930, 800 deaths had occurred. But the great tragedy was the large number of boys killed and injured. There were 29,000 boys under 16 working underground and the number killed and injured last year was at the rate of 251 for every thousand employed. For all ages the rate was 212. The chief inspector of mines had suggested that something might be done to prevent loss of life if steel supports were used instead of wooden ones and if there was better lighting. In reply Mr. Shinwell, parliamentary secretary, mines department, said that one line of approach to the problem of greater safety was cooperation between employers and employed for the efficient working of the mines and the fixing of the attention of the miners on the observance of the regulations laid down by the mines department. Although progress had been made on promoting safety, the position could not be regarded with complacence. In 1924 the accident rate per thousand employed below and above ground was 158 and it steadily rose to 181 in 1929. The mortality rate rose from 0.98 in 1924 to 1.11 in 1929. These rates were too high under the circumstances. No complaint could be laid at the door of the inspectorate of the mines department. He hoped to promote further cooperation between the employers and the miners. One cause of accidents was that because of piece rates or economic reasons men hurried and took undue risks. It is proposed to raise the minimum candle power of miners' safety lamps. Investigations into falls of roof and into the subjects of wire ropes and haulage generally are taking place.

Removal by a "Faith Healer" of Splints from Tuberculous Children Under Treatment

In the part of Staffordshire known as the Potteries (because of the industry carried on there) trouble has arisen from the interference of a "faith healer" in the treatment of crippled children. A certain Pastor Jeffreys united faith healing with his revivalist campaign and the usual sensational results were claimed. After his "treatment," which consisted only of prayer, he removed the splints of certain cripples at the hospital of the North Staffordshire Cripples Aid Society, who had been referred there for orthopedic treatment. The medical officer brought the matter before the local health officer for Stoke-on-Trent, who in turn laid it before the health committee of the city council. Three cripples suffering from tuberculosis of the spine had been fixed in frames and yet the revivalist took off the frames though the condition was such that no orthopedic surgeon would have dared to do so. In another case of active tuberculous arthritis with flexional deformity, fixed in a bed splint and guarding plaster, the appliance was removed. In the case of a leg shortened 4 inches and fitted with a raised boot and caliper, the latter was removed. The local authority reacted by refusing to let halls under its control, which had been booked by the healer for future meetings, to be used, but then decided to ask him to give an undertaking not to interfere with the splints of children under treatment. But his popularity was so great that meetings of protest were held and petitions with thousands of signatures were presented. He was at first recalcitrant and said that he would continue his work and get other halls. Then he stated that the splints had not been removed on his initiative but at the desire of the patient or his parents. He offered a limited undertaking not to remove leg supports; but this was declined and he finally agreed not to interfere with crippled children for whom the council was responsible.

PARIS

(From Our Regular Correspondent)

Nov. 26, 1930.

Law Pertaining to Persons of Unsound Mind

A discussion is being carried on at present before the senate on the subject of proposed changes in the law pertaining to persons of unsound mind. The present law dates from 1838 and is in need of a complete revision, in spite of the modifications that parliament has made from time to time. Parliamentary discussions were held on the subject in 1886 and again in 1913, but no definitive conclusions were reached. In 1922, Mr. Paul Strauss, senator, having become minister of health, drew up a new text that provided for radical changes in the law and that had been worked out after a comprehensive study of the matter by alienists and psychiatric societies. That is the draft that has now come up for discussion. The point of view of the public and that of the alienists is rather opposed. The general public, influenced by writers of romances, fears more especially arbitrary internment on the charge of insanity that is inadequately proved. The alienists comprehend the interests of the general public better than the public itself and demand that they shall be the sole judges as to the dismissal from a psychopathic institution of a patient who appears to incompetent persons to be cured but who, if he is dismissed, may do himself or others harm. The projected law provides that the courts shall assume this responsibility but that they shall take account of the opinions of alienists. The latter may decide that the patient shall be kept under observation at the psychopathic hospital for six months and, if need be, a year. The law as drafted considers possible cases not only of arbitrary internment but also

of premature dismissal followed by culpable attacks. The new draft considers, furthermore, the financial question, which is of paramount importance for patients of limited means. According to the existing law, the hospital charges must be borne by the commune in which the patient resides, if he is financially unable to meet them. The charges are, however, heavy and many communes in the rural districts have too small a budget to assume the additional obligation. It is necessary to provide in such cases for government aid. It happens often that mayors refuse to issue an order of commitment to a departmental psychopathic hospital, even though patients who have been proved to be dangerous are concerned, for no other reason than a desire to avoid the expense involved. During the course of the discussion of the drafted law, Senator Louis Merlin furnished some recent statistical figures on mental illness in France. There are more than 90,000 interned patients, with more than 15,000 (1 patient for each 400 inhabitants) in Paris and the department of the Seine. The annual expenditures for these patients amount to 300,000,000 francs, or $12,000,000, one third of which, or $4,000,000, falls to the department of the Seine. Mr. Merlin thinks that the most important preventive measure is the crusade against alcoholism, which is the chief factor in mental degeneration. But it is a difficult crusade to carry on in France, a country of wine growers, where a large part of the population lives from the production and the trade in alcoholic beverages.

The Trade in Narcotics in France

The international conference for the purpose of drawing up an agreement pertaining to the limitation of the manufacture of narcotics, which was provisionally established on December 1 of this year, will be held in June, 1931. A preliminary conference of the countries manufacturing narcotics is being held at present in Geneva. It is a question of putting into application the resolution passed by the council of the League of Nations, in September, 1929, which sets forth that the limitation of the manufacture of narcotics is the only means of bringing to an end the abuse of the nonmedical employment of narcotics. The following information concerning the trade in narcotics in France, during recent years, is supplied by the bulletin published by the Association de défense internationale contre les stupéfiants. The survey comes as a surprise to many Frenchmen. The importations of opium into France passed from 41,200 Kg. in 1926 to 44,100 Kg. in 1927, and in 1928 rose to 159,221 Kg. The total exportations during that period having been only 6,223 Kg., France consumed or transformed into alkaloids 238,298 Kg. of crude opium. The importations of morphine, which amounted to 5,336 Kg. in 1926, were 1,145 Kg. in 1927 and 1,684 Kg. in 1928. To make up for this decline, its manufacture developed from 2,000 Kg. in 1926 to 2,300 Kg. in 1927 and 7,728 Kg. in 1928. The exports, during those three years, diminished, passing from 2,173 Kg. in 1926 to 1,168 Kg. in 1927 and 777 Kg. in 1928. In 1928, France imported 1,078 Kg. of heroin and, according to the declarations, 3,000 Kg. was manufactured, although, from an inquiry instituted by Russell pasha, chief of police of Cairo, it appears that a single plant (that of Mulhouse, created during the German occupation) manufactured 4,108 Kg. of this drug during that year. For crude cocaine the importation figures are, respectively, 1,302 Kg. in 1926, 908 Kg. in 1927 and 982 Kg. in 1928. The exportations were 399, 396 and 506 Kg., respectively.

Discussion on the Status of Hygiene in France

The annual report of Mr. Brouardel on epidemics gave rise, at the Academy of Medicine, to an interesting discussion on public hygiene in France. The speaker, after giving and commenting on the departmental statistics, concluded with the statement that, in 1929, France had an excess of 12,654 deaths over births, in spite of improvements in the health services. Mr. Martin expressed the opinion that the present bad condition was due to abandonment of the methods employed during the war. At present, hygienic conditions were excellent and that was due to a regional organization with laboratories in which civil and military workers collaborated. Dr. Roux added that it was chiefly the sanitary authority that had disappeared. There are laws and regulations, but they are not applied. The grave defect of the law of 1902 was that, in each commune, it charged the mayor with the enforcement of hygienic regulations, a duty that he does not readily assume for fear of displeasing his constituency. Mr. Léon Bernard declared that it was impossible to consider a return of the regional system at a time when the chamber of deputies is going to be besieged with important legislation tending to organize sanitary protection on a departmental basis. In his opinion, what was lacking was the creation, in the ministry of public health, of a board of technicians that would aid the minister in carrying out his plans. The present minister, Mr. Désiré Ferry, would accept such a proposal, though it does not figure in the texts presented to parliament. Mr. Bernard asked the academy to approve a resolution calling attention to the regrettable insufficiency of the public health services and demanding the creation of a central technical board charged with coordinating and stimulating sanitary action throughout the country. The resolution was unanimously passed and was submitted to the public authorities.

First-Aid Stations Along the Highways

The delegates of the fourteenth International Conference of the Red Cross Societies have arrived in Paris, where they were received by the Union nationale des associations de tourisme, which arranged for their benefit a demonstration of the installations effected along the highways of France to assure requisite aid for the victims of traffic accidents. Among the large group of delegates, may be mentioned more particularly General Bauer, representing the Swedish government; Baron Sternstedt, of the Swedish Red Cross Society; Dr. Swendsen, of the Danish Red Cross Society; Dr. Lilingston, of the Norwegian Red Cross Society; Commandant de Grifenberg, of the Finnish Red Cross; Tamanuya, of the Japanese Red Cross; Dr. Iophany of the "Red Lion and Sun" of Persia; Colonel Bicknell, of the American Red Cross; Miss Band, of the Red Cross of Netherlands; Mr. d'Enfert, of the Société de secours aux blessés militaires; Mme. Brunet, of the Union des femmes de France; Mlle. Bekaert, of the Association des dames françaises; Captain Peterson and Mr. de Bernouville, of the League of Red Cross Societies. Dr. Behague gave an account of the movement to secure first-aid stations along the highways. At present there are nearly 1,350 stations in operation along the highways of France, or at the rate of a station every 5 kilometers, on the average. The following highways are completely equipped: Paris-Deauville, Paris-Le Hâvre, Paris-Dieppe, Paris-Boulogne, Paris-Calais, Paris-Dunkirk, Paris-Lille, Paris-Valenciennes, and likewise the crossroads of the region Paris-Reims-Mézières, Paris-Châlons-Metz and to the frontier; Paris-Strasbourg, Paris-Châlons-Lyons, Paris-Lyons, Vichy, Valence, Marseilles and Menton. Likewise, all the roads of the region of the Southwest comprised between the Valley of the Rhone, the Mediterranean and the Alps are completely equipped. Within a few months, two new routes, at present in course of construction, Paris-La Baule and Paris-Orléans, Châteauroux-Limoges-Toulouse and the Spanish frontier will be provided with first-aid stations. In addition, a number of mobile stations have been established by equipping the automobiles of the gendarmerie, which patrol the highways for the surveillance of automobilists and which instructs its personnel in the methods of rendering aid along the highways. It is planned to apply this system also to the 600 vehicles of the postal and the telegraphic services. The statistics show that, since the organization of this service by the Union nationale des associations de tourisme, nearly 1,150 wounded victims of automobile accidents have been aided and more than 40 persons killed have been evacuated. After this account, the guests were conducted to the first first-aid station

outside of Paris, on the national route 20, at Croix-de-Berny, where a practical demonstration was given in their presence. A permanent telephonic apparatus recently installed near this station was likewise tested. This apparatus, a kind of taxiphone, is connected with an exchange that functions night and day and enables witnesses of an accident or the victims to call assistance at any hour. The charge for the connection with any city is only one franc, or four cents. The introduction of a one franc piece in the apparatus establishes the connection. The Union nationale des associations de tourisme is planning to place such taxiphones at all the most important first-aid stations.

ITALY

(From Our Regular Correspondent)

Oct. 31, 1930.

Longevity in Italy

The Istituto centrale di statistica, with headquarters in Rome, has collected, from necrologic reports and by means of special questionnaires, interesting information on anthropologic characters, the composition of families and the personal habits of persons 90 years and beyond who died in 1926 and in 1929. It appears that the number of such decedents in Italy in 1926 was 3,897 (1,754 males and 2,143 females), or in the proportion of 100 males to 122 females. Of 100 decedents of both sexes, 87 were between 90 and 94 years old, 12 were between 95 and 99, and 1 had passed the 100 mark. Venice reported the largest number of aged persons. In 1929 there were 2,872 decedents above 90 years of age, 1,254 of whom were males and 1,618 were females (100 males to 129 females). In 1929, also, the largest number of aged persons was reported from Venice.

The Sale of Orthopedic Appliances

The public health service, in view of the fact that the sale of prosthetic apparatus is preceded by the preparation of models and trial applications on the patient, has decreed that authorization for the sale of such appliances shall be granted only to orthopedic mechanics who have been certified. The new regulation is to prevent the abusive exercise of the orthopedic art, which is regarded as an auxiliary of the healing art. An exception is made in favor of trusses for the relief of hernia, which orthopedic mechanics manufacture in series, corresponding to various measurements and types, easily adjustable without individual measurements or trial applications to the person of the wearer, and without any danger to his health.

International Congress on History of Medicine

The eighth International Congress on the History of Medicine, held in Rome under the chairmanship of Prof. Pietro Capparoni, was attended by 230 representatives of 23 foreign nations, and the official delegates of 14 nations and 40 academies. The official papers and communications presented were so numerous it was necessary to divide the congress into three sections.

Professor Jeanselme of Paris presented a paper on "How Europe Protected Itself Against Leprosy in the Middle Ages." He gave an account of the history of leprosy, which, at one time, became widespread through the ignorance of physicians and the public, lepers being allowed to carry on business and to be in charge of public places such as barber shops and bath establishments. Later diagnostic centers were established, at which a leprous person might serve as an expert. Still later, it came to the adoption of prophylactic measures consisting solely of isolation, in which favoritism played a big part. Nothing was done by way of treatment. Lepers came to be clothed in special garb so that they could be recognized and avoided. About the sixteenth century, leprosy subsided rather suddenly, as the result, the speaker thinks, of the more widespread use of soap and water, and to better hygienic conditions, rather than to an attenuation of the virus. Prof. Arturo Castiglioni of Trieste gave an official paper on "The Rebirth of the Biologic Sciences in the Sixteenth and Seventeenth Centuries." The speaker brought out the relation between the political rebirth and the social renaissance that took place at that time, associated with a new love for scientific research and experimental studies. He spoke also of the intimate cultural relations, during that epoch, between Italy and the other nations of Europe. Colonel Casarini, of the army medical corps, spoke on two forerunners of the Red Cross, the military epidemiologists Orazio Monti and Lucantonio Porzio, of the seventeenth century. The widow of the eminent malariologist Prof. Angelo Celli of Rome spoke on allusions to malaria in the poets from Virgil to Carducci. Many further communications were presented, and at a session held at Monte Cassino (in the historic hall of the capitol) Prof. Davide Giordano, senator, and surgeon of Venice, was chosen president of the international society. Bucharest was selected as the place of meeting of the next congress. Spanish and Latin were added to the list of official languages for these congresses.

Society for the Promotion of Science

The Società italiana per il progresso delle scienze held its nineteenth annual meeting in Bolzano and Trent, under the chairmanship of Professor Blanc, deputy, who was retained as chairman for two years longer. On that occasion, the ten committees of the Consiglio nazionale delle ricerche held a plenary session in Trent, under the chairmanship of Guglielmo Marconi. In the section on biology, Professor Bottazzi, physiologist of the University of Naples, presented an official paper on "The Physiologic Aspects of Muscular Work." The speaker defined the physiologic concept of work, which differs from the purely physical concept, since it includes, in addition to dynamic work, also static work. He recalled the objections that have been made of late to the classic conception that regards lactic acid as the source of muscular contraction. As the source of heat and mechanical energy, the muscle employs preferably carbohydrates and, more particularly, glycogen. To supply the restorative oxidations a large quantity of oxygen is needed. The speaker reviewed the organic functions through which the needed substances are carried to the muscle in the quantity and with the speed necessary during and immediately after the work. He explained then the conception of the oxygen deficit that the muscles incur when their action is required to a maximal degree, as in athletic contests. It is chiefly the respiratory and the circulatory apparatus that undergo profound modifications during muscular work. The respiratory apparatus reacts with effort hyperpnea, and the heart throws into the arteries a larger volume of blood and increases the frequency of the pulsations. Also the endocrine glands, which control the metabolism of carbohydrates, come into action. Professor Bottazzi explained then the physiologic mechanism of respiration. In the man who works, not only are the muscles active but nearly all the large organic systems, so that the science of work is virtually the physiology of the internal human organism.

Speaking of the nutrition of laborers, Bottazzi pointed out that they need not only carbohydrates but also proteins of high physiologic value, fats, inorganic salts and vitamins. Statistics show that the consumption of meat by the laborer has steadily increased and that the increase is in direct proportion to the increases in wages. According to Bottazzi, that is only the expression of a physiologic need. The speaker emphasized that Italy should follow the lead of other countries and establish an institute for the experimental study of the mechanical, biochemical and psychophysiologic mechanisms of work.

Prof. Gaetano Fichera presented a communication on "A Contribution to the Attempts to Discover a Biologic Treatment for Malignant Tumors." The speaker recounted the results secured in the treatment of numerous cases of cancer by his method of injection of oncolytic substances derived from the endocrine organs. According to Fichera, these substances have the power of retarding the development of tumors

and of destroying them. The communication was accompanied by the projection of numerous microscopic preparations that showed in a specific manner the retrogressive changes induced in the neoplastic tissue by his preparation, which, on the other hand, exerts no influence on the healthy tissues, even though located in the immediate vicinity of the tumor.

Prof. Luigi Devoto, director of the Clinica delle malattie del lavoro of the University of Milan, presented a paper on the important Italian campaigns in the crusade against, and in the victory over, pellagra.

Through the initiative of the Associazione di idrologia e terapia fisica, a large meeting of conventionists at the Levico Springs was held, during which Prof. Pietro Boveri presented a communication on the spring waters of Levico-Vetriolo, explaining their composition and their therapeutic action. The therapeutic action is observable especially in disease of infants (traceobronchial adenitis; disturbances of growth) and in diabetes.

Professor Casagrandi of the University of Padua spoke on the microbiology of waters containing iron and arsenic. His studies established the presence in various mineral waters of granules having an intense catalytic action on micro-organisms, which engulf the granules. This action is intense in natural waters containing iron and arsenic but does not occur with the same intensity in waters artificially mineralized. Unlike most other types of mineral water, the kinetic qualities of the fresh water at Levico are retained after being bottled for some time.

Pneumonoconiosis

As a result of the wishes of the permanent international commission for the study of occupational diseases, the inspection service of the minister of corporations has made researches on the pulmonary disorders of workers in marble and asbestos. The results have been published in a volume that shows the present state of pneumonoconiosis in Italy, together with clinical, radiologic and bacteriologic studies on the subject.

The Consultation Centers for Mothers

The consultation centers for mothers, established for the benefit of puerperants of limited means and constituting part of the relief work of the Cassa delle assicurazioni sociali, began to function in Italy in April, 1927. At present there are eighteen centers. During the first six months of the current year, the number of applicants for assistance was 6,910, while a total of 12,690 visits was made; 257 operative acts and 1,319 special services were performed; 305 puerperants were placed in treatment centers.

Immunity, Superinfection and Reinfection in Syphilis

At the eighth International Congress of Dermatology and Syphilology, held in Copenhagen, Prof. Mario Truffi, director of the Clinica dermosifilopatica of the University of Padua, presented the official paper on the second topic on the program, "Immunity, Superinfection and Reinfection in Syphilis." He said that in man there is no natural immunity to syphilis, and even certain animal species that, up until recently, were regarded as entirely refractory to the disease are so only in appearance. The immunity conferred by an infection of syphilis toward new infections is not complete, and it is more marked during the period of general manifestations. The lesions from reinoculation present, in general, in the syphilitic patient the type of manifestations characteristic of the period that the primary infection had reached. In dementia paralytica there is almost absolute refractoriness of the skin to reinoculation. The refractoriness is less marked in tabes. While there are no absolute proofs as to when a syphilitic patient may be regarded as cured, it may be held, from a practical point of view, that syphilis in man is curable. It cannot, however, be denied that there may be cases of reinfection; that is to say, a new infection of an organism presumably cured of a previous infection, and presenting a course identical with that which was observed in the originally healthy organism. The cases of reinfection have become much more numerous since the introduction of arsphenamine treatment, and especially in persons receiving intense treatment in the first phases of the contagion. Since it is impossible to assign an absolute value to the criteria pointing to recovery, it is likewise impossible to establish a frank limit between superinfection and reinfection; that is, where the one ends and where the other begins.

The existence of diverse strains of spirochetes endowed with the capacity of becoming localized in definite organs is not demonstrated. In the organic fluids no antibodies directed against the spirochete can be discovered; hence, it is probable that in syphilis the immunizing substances are of histiogenic rather than humoral origin, but it cannot yet be affirmed with certainty what elements are concerned with the defense, nor the exact manner in which the defense is organized. The conditions of immunity may be influenced by various toxic, infective and dysendocrine causes. The attempts to produce active and passive immunization or to discover some immunizing form of treatment have not led, as yet, to any conclusive result.

Malaria and the Army

At the second International Congress of Malariology, held in Algiers, Colonel Rizzuti, director of the army health service in Sicily, presented a paper on the topic "Malaria and the Army." The speaker stated that if breeding places for anopheles mosquitoes are discovered adjacent to soldiers' quarters, the services of the disinfection squad are called in to remedy the situation. The condition of the army may be regarded as an index of the incidence of a malaria epidemic in a given region. A first indication is obtained by the number of registrants at the recruiting stations who, at the time of registration, declare themselves unable to perform military duty owing to sequels of previous attacks of malaria. A second indication is obtained after the enlistment, which time usually corresponds with the preepidemic period of malaria, from the number of recruits in whom malaria is diagnosed. The census of malarial subjects is taken in all divisions of troops. The recruits with malarial symptoms, and likewise the seasoned men who suffered from malarial infection in previous years, are subjected to quinine medication for two months. At the time of the census, a search is likewise made for chronic carriers and for healthy carriers of malaria parasites. The last mentioned possibility, which was observed during the war, has since been demonstrated rather frequently in localities in which malaria is endemic. In the Italian army, numerous instances of the phenomenon were found during the stay in Albania. Similar observations were made in the British army during the expedition to Palestine and to Egypt. From this phenomenon arises the necessity of subjecting to prophylaxis all the soldiers stationed in malarial zones. In addition to mechanical protection, prophylactic measures are adopted, together with administration of quinine in strong doses two times a week. If an actual attack of the fever occurs, the treatment is given in the special departments of the military hospital and is supplemented by the successive treatment of convalescents.

Statistics show that the incidence of malaria in the army, since the recrudescence observed during the war and immediately thereafter, is decreasing. The number of patients ranges from thirteen to fourteen per thousand effectives. A distinction is made between recurrences and primary types, while the primary types are divided into acute and chronic. The predominant type is a tertian form termed *terzana primaverile*, especially as a recurrence. Quinine prophylaxis, in spite of the difficulties that its application presents, is the almost exclusive means adopted during war time. In peace times plasmochin may well be combined with quinine, especially in the benign tertian type. Observations made on patients who were in the war have led to the conclusion that malaria may be effectively cured.

AUSTRALIA

(From Our Regular Correspondent)

Nov. 18, 1930.

Mental Hygiene in Victoria

As a part of an international movement, a Victorian council for mental hygiene has been formed in Melbourne from representative medical men, educators, psychologists and social workers, under the presidency of Sir Richard Stawell. As its first expression, the council has organized a series of six public lectures on "The Young Child," which are intensely practical and deal with why children are naughty, the mischief of fear, the child at play (motion picture), the child in a temper, the growth of personality, and should children obey.

Consumption of Cocaine in Australia

According to the League of Nations opium board, Australia had the unenviable distinction last year of heading the Anglo-Saxon countries in the consumption of cocaine. The figures per million inhabitants are: Australia, 14.67 Kg.; United States, 7.88; Great Britain, 5.5; Canada, 5.46. These figures are difficult to explain, as there is little illicit use of cocaine in Australia. What little there is takes place in Sydney, where the traffic has a precarious existence. One possible factor may be the almost universal use of local anesthetics in dental extractions in Australia.

The Crusade Against Tuberculosis in Australia

A campaign to raise £10,000 on behalf of the National Association for the Prevention and Cure of Consumption was launched by the governor of New South Wales recently. Besides the invitation for subscriptions, special stamps will be printed and sold at threepence each, in order to raise money to assist the organization against tuberculosis. Among the objects of the association, are compulsory notification and the establishment of tuberculosis dispensaries. An endeavor is being made to purchase a roentgenologic plant, which will enable the association to carry out more effective work. The association realizes that consumption requires long and expensive treatment, and any organization to combat the disease must have an assured income. The association already conducts a tuberculosis clinic in Sydney. There is also a government institution, the Waterfall hospital for consumptives, with accommodation for 441 patients.

In Victoria the state government supervises tuberculosis treatment and has established a central dispensary and a country sanatorium. The children's hospital has a country branch for the treatment of surgical tuberculosis. Queensland has a sanatorium 160 miles inland in a dry warm climate. A section of the hospital for chronic diseases in Brisbane is also set aside for hopeless cases, such as laryngeal tuberculosis. South Australia has a consumptive home in connection with the Adelaide Hospital.

The commonwealth government exercises an advisory control over the tuberculosis situation in Australia by means of a division of tuberculosis and venereal diseases in the commonwealth department of health. This department has no executive or direct administrative power in this matter, except as regards the territories it governs.

One interesting feature of the tuberculosis situation in Australia is that in Queensland surgical tuberculosis is practically unknown, whereas in Victoria it is comparatively common. There is definite evidence that tuberculosis in domestic animals is equally common in the two states. The reason given for this phenomenon is that the open air life of the Queenslanders and the sunny nature of their climate help to build up their immunity, while the custom of the housewives of boiling cow's milk (with the idea of improving its keeping qualities in the warm climate) destroys the commonest source of infection. The extent of tuberculin testing of dairy herds that is carried out in Queensland is negligible.

Statistics show that the tuberculosis death rate in Queensland is the lowest recorded in the world. For every 100,000 persons in Queensland in 1928 the death rate was 41, of which 38 were of respiratory origin. New Zealand comes next with 50; then South Australia, 50; Union of South Africa (whites), 51; New South Wales, 54; Ontario, 57; Australia as a whole, 58; Ceylon, 63; Tasmania, 65; Victoria, 66; Denmark, 78; Western Australia, 79; Canada, 81, and the United States registration area, 81. In Great Britain the rate is 99, in France it is 164, and Bulgaria brings up the rear with 314 deaths from tuberculosis for 1927 per hundred thousand persons living. The death rate for Australia from tuberculosis has fallen from 61 in 1924 to 58 in 1928. The improvement has been more marked in males (71 reduced to 65) than females (51 reduced to 50).

One of the factors in Australia's tuberculosis problem is the relationship that exists between deep gold mining and the inhalation of the quartz (producing silicosis) which occurs chiefly in the mining areas of Bendigo in Victoria and Kalgoorlie in Western Australia. A periodic investigation of each miner (including roentgenologic) has had a good effect by establishing an early diagnosis and transferring such persons to a surface environment that is not dusty. It is considered that the Australian antituberculosis organization is increasing its effectiveness.

JAPAN

(From Our Regular Correspondent)

Nov. 3, 1930.

Infant Mortality in Tokyo

Mr. Takashima, health expert of the Metropolitan Police, has published his statistical observations on the death rate of infants in Tokyo. He intended to make some researches that would come to a conclusion concerning the necessity of birth control, which the authorities of Tokyo began publicly to carry on last year and which led the physicians and other men of authority to much discussion at the beginning of this year. He has studied the statistics published by the statistics bureaus last February about the population of this country from January to September, 1929, and has found that the death rate of infants in Tokyo is rather low in comparison with those of other places, averaging 12.5, as compared with 14.4 for the rest of Japan. The birth rate of the city of Tokyo is also lower, being 29.28 per thousand, as compared with 36.31 for Japan.

The lower birth rate is considered to be caused by the following: In Tokyo live more unmarried young people, who have come to town from country districts and are studying at schools or are employed in shops or factories. After the earthquake disaster in 1923, most women left the wrecked city for the towns around it. The higher degree of culture in residents of cities, as is reflected in the habits of the higher animals, has lowered the productive faculty. Besides this, the health of the citizens is affected more by mental as well as material hazards of city life.

The number of medical practitioners in Tokyo is 7,429, which is one physician for every 682 inhabitants of the city.

Doai Memorial Hospital

The hospital that was established in Tokyo from contributions donated mainly by charitable Americans on the occasion of the earthquake disaster in 1923, and completed and opened in June of last year, has recently published the first annual report. To the end of March, 1930, 14,483 patients applied for medical and surgical treatments, a daily average of 597.

Epidemic Encephalitis

Epidemic encephalitis prevailed again this year in the districts of Kansai, the center of which is Osaka, and Kanto, the center of which is Tokyo. It began to break out in April, and 237

cases were reported, with 135 deaths, a proportion of more than 58 per cent. In Fukushima, a prefecture of Kanto District, six cases occurred last August, four in females and two in males, from 11 to 75 years of age, and three patients died before microscopic examination could be made. From the other three, Weichselbaum's cocci could be demonstrated in the nasal secretion. No geographic or other connection could be demonstrated between any of the cases.

Dr. Miyajima's Return

September 23, Dr. K. Miyajima, professor in the Keio University, who went to Europe last May and attended the commission of the League of Nations, returned to Tokyo with Dr. Koizumi, who was sent to Europe by the university last February to inspect the public health.

BERLIN

(From Our Regular Correspondent)

Dec. 1, 1930.

Nutrition Problems, Old and New

The question of proper diet was discussed recently before the Berliner Verein für innere Medizin und Kinderheilkunde by Prof. Carl von Noorden (formerly of Frankfort-on-Main but now in Vienna), who chose as his subject "Nutrition Problems, Old and New." The topic and the reputation of the speaker attracted a large audience, such as the Langenbeck-Virchow-Haus has seldom witnessed. Among the numerous guests were Professor Madsen and Dr. Rajchmann, members of the commission on hygiene of the League of Nations.

Correct nutrition constitutes, as the chairman, Geheimrat His, said in his introduction, one of the sources of strength of every nation, and the problems of nutrition concern, therefore, equally the economic expert and the physician. The origins of the knowledge of nutrition date back to the primitive instincts of the peoples inhabiting the earth; but especially during the course of the nineteenth century, with the progress in the natural sciences and the rise of modern medicine, a genuine science of nutrition has developed. Names such as Liebig, Bunge and Rubner are milestones that mark this development, which today is still going on unchecked.

During recent years, the general public has shown an increased interest in the science of nutrition, owing to the fact that attention has been directed to rational nutrition by the movements to increase the consumption of seafood and of rye bread. Many articles have been published also on the endeavors to create public dining rooms, where especial attention would be paid to diet, and on the creation of diet kitchens for hospitals. The discussions on diet received further stimulation when Dr. Gerson came on the scene with his salt-poor diet for tuberculosis, and Professors Sauerbruch and Hermannsdorfer emphasized the value of a systematic diet in the treatment of wounds.

Professor von Noorden discussed the prevailing views in regard to the advantages and the disadvantages of mineral salts in nutrition. If one conducts a series of metabolism experiments such as Noorden himself carried out, one will obtain, at least in many cases, definite bases for the proper use of mineral salts. From observations on the physiochemical rôle that mineral salts play in the economy of the body, one can deduce, to a certain extent, suitable norms for the use of the salts. Furthermore, certain disorders, such as softening of the bones, thyroid conditions and tetany, give certain clues to the rôle of mineral salts in the body. Noorden did not, however, confine himself to a clinical consideration of the subject. No less impressive were his critical observations on the present methods of soil fertilization. He expressed considerable doubt as to whether fertilization with artificial fertilizers such as the market affords actually provides plants with all the substances needed for the diet of man. He criticized adversely also the usual methods of preparing foods, in that the water in which they are cooked is commonly poured off, thus entailing a loss of important food factors. In this connection he called attention to the service that Lahmann had performed in emphasizing the value of raw foods, though he did not fail to warn against the onesidedness of a raw food diet. In fact, he uttered a general caution against attaching too much importance to the rigorous application of precise methods of nutrition. The now popular mineral salt treatment has its drawbacks just as the salt-free diet (which is not actually salt-free but only poor in salt, since salts are found in the natural food products). For the general diet of the people it is sufficient if the daily allowance of salt is reduced from 15 Gm. to from 8 to 10 Gm. The chief value of the diet poor in salt is the fact that it increases the calcium content of the blood and thus strengthens the general resistance of the organism to disease-producing influences. In nutrition, as elsewhere, fashion and prejudice play an important part, and many a diet today is more or less the result of suggestion. In certain cases, a diet poor in protein, and diets that stimulate hunger and thirst, may be indicated. On the other hand, one cannot assume that forced feeding is always indicated in tuberculosis. Nor should the so-called rheumatism diet be overemphasized at the expense of actual salicylic acid treatment and a diet rich in vitamins, which is widely recommended, is not always indicated. On the basis of his extensive personal experience, Noorden advised, in administering strict forms of diet for chronic sufferers, to introduce, from time to time, a few days on which greater latitude is allowed; the patient is thereby relieved and suffers no evil consequences therefrom. The "zigzag" or contrast diet consists in withholding from the patient entirely, for a few days, the things that are tabu; for example, table salt, fat or potatoes, while on all other days he is allowed greater liberty than could otherwise be accorded. In emphatic terms the speaker finally stressed the need of considering, in planning a diet for the people as a whole, the general experience of the nation and the existing economic conditions, instead of adhering in a onesided manner to scientific principles. In conformity with the national economy, research, on the basis of its observations, must demand that in the general diet for the people wide recognition must be accorded to the carriers of vitamins and of mineral salts—that is, above all, to rye bread, fruit, fresh vegetables and leafy salads—along with meat and potatoes.

Death of Prof. Werner Kümmel

Prof. Werner Kümmel, the director of the Heidelberg University ear clinic, died from a disease of the ear, at the age of 64. His textbook on "Diseases of the Buccal Cavity," which was published in cooperation with J. v. Mikulicz, has passed through several editions. In 1890, Kümmel became an instructor in surgery of upper respiratory tracts and the ear, at the University of Breslau. In 1896, he was advanced to professor extraordinarius, and, in 1902, he was called to the University of Heidelberg as the successor of Passow, where he later became an ordinarius. Kümmel was not merely a physician of scientific importance but he was also a man who took great interest in the misfortunes of his fellows and sought to aid all who appealed to him for assistance.

Centenary of the Hufeland Foundation

Dr. Christian Wilhelm Hufeland, one of the most eminent physicians of Old Berlin, founded the Hufeland Foundation *(stiftung)*, which now looks back on a hundred years of beneficent activity. Its chief aim is the rendering of financial aid to unfortunate physicians or to their widows and orphans. With the limited resources available in 1831, consisting of only 4,628 marks, 10 physicians received aid; in 1840, the number thus aided had increased to 57, and in 1929 the recipients of aid included 24 physicians, 214 widows of physicians and 43 orphans of physicians.

Marriages

Charles Pennington Ryland, Jr., Buena Vista, Va., to Miss Edith Elizabeth Finney of Washington, D. C., Nov. 15, 1930.

Warren Womack Koontz, Roanoke, Va., to Miss Mary Winston Woodson of Lynchburg, Nov. 5, 1930.

Richard Williamson Fowlkes, Richmond, Va., to Miss Louise Fishburn of Roanoke, Nov. 15, 1930.

E. Lee Shiflett, Elkton, Va., to Miss Ruth Bryant McDonald of Goshen, Oct. 25, 1930.

Louis Wachtel, Sunnyside, N. Y., to Miss Sarah Dolly Kohn of New York, Nov. 11, 1930.

Reid White, Jr., Lexington, Va., to Miss Alice Miller of Montclair, N. J., Aug. 28, 1930.

Deaths

Benjamin Van Doren Hedges ⊕ Plainfield, N. J.; Medical Department of Columbia College, New York, 1891; member of the American College of Surgeons; member of the board of health and for seventeen years member of the school board; on the staffs of the Muhlenberg Hospital, Plainfield, and the Bonnie Burns Sanitarium, Scotch Plains; aged 64; died, Dec. 2, 1930, of heart disease.

David Samuel Marshall, Ashland, Pa.; Jefferson Medical College of Philadelphia, 1876; member of the Medical Society of the State of Pennsylvania; for many years member of the school board; past president of the board of health; formerly county coroner; aged 74; died, Nov. 23, 1930, of heart disease.

William Arthur Shepherd, Seymour, Wis.; College of Physicians and Surgeons, Medical Department of the University of Illinois, Chicago, 1903; member of the State Medical Society of Wisconsin; aged 55; died, Nov. 23, 1930, in a hospital at Green Bay, of pneumonia, following influenza.

George Hewett Smith, Kansas City, Kan.; Eclectic Medical University, Kansas City, 1906; member of the Kansas Medical Society; served during the World War; aged 62; on the staff of the Bethany Hospital, where he died, Nov. 29, 1930, following an operation for appendicitis.

Smith Jerome Thorington, Grand Rapids, Mich.; University of Michigan Medical School, Ann Arbor, 1926; aged 31; died, Nov. 23, 1930, in St. Mary's Hospital, of injuries received when the automobile in which he was driving was struck by a train.

Joseph Louis Barker, Oklahoma City, Okla.; University of Louisville (Ky.) School of Medicine, 1898; member of the Oklahoma State Medical Association and the Kentucky State Medical Association; aged 53; died, Dec. 4, 1930, of cerebral hemorrhage.

Charles Henry Solier ⊕ Evanston, Wyo.; Long Island College Hospital, Brooklyn, 1888; member of the American Psychiatric Association; superintendent of the Wyoming State Hospital; aged 69; died, Dec. 10, 1930, in Hollywood, Calif., of embolism.

Sarah Drowne Belcher Hardy, New York; Woman's Medical College of the New York Infirmary for Women and Children, 1891; member of the Medical Society of the State of New York; aged 66; died, Dec. 15, 1930, in St. Luke's Hospital.

Louis Phillip Barnett, St. Louis; University of Arkansas School of Medicine, Little Rock, 1927; member of the Missouri State Medical Association; school physician for the public schools in University City; aged 29; was found dead, Dec. 2, 1930.

William Alexander Morgan, New York; Atlanta Medical College, 1897; member of the Medical Society of the State of New York; served during the World War; on the staffs of the Lying-In and Woman's hospitals; aged 55; died, Dec. 1, 1930.

David A. Rundstrom, Curtis, Neb.; University of Nebraska College of Medicine, Omaha, 1902; member of the Nebraska State Medical Association; aged 52; was found dead, in his garage, Oct. 20, 1930, of carbon monoxide poisoning.

William Benham Snow ⊕ New York; Medical Department of Columbia College, New York, 1885; past president of the American Electrotherapeutic Association; editor-in-chief of *Physical Therapy;* aged 70; died, Nov. 29, 1930.

Daniel Adriaan Zwigtman Van Noppen ⊕ Niles, Mich.; University of Brussels Faculty of Medicine, Brussels, 1874; Saginaw Valley Medical College, 1901; aged 78; died, Nov. 6, 1930, as the result of a cerebral hemorrhage.

Porter Hodge Linthicum, Evansville, Ind.; Rush Medical College, Chicago, 1908; on the staffs of St. Mary's Hospital and Protestant Deaconess Hospital, where he died, Dec. 12, 1930, aged 53, of heart disease and nephritis.

Frederic Grosvenor Goodridge, New York; Columbia University College of Physicians and Surgeons, New York, 1901; served during the World War; aged 56; was found dead, Dec. 17, 1930, of a bullet wound.

Francis Allen Lang, Cleveland; Western Reserve University School of Medicine, Cleveland, 1928; member of the Ohio State Medical Association; aged 28; was killed, Nov. 24, 1930, in an automobile accident.

Percy John McElrath, Bramwell, W. Va.; College of Physicians and Surgeons, Baltimore, 1893; member of the West Virginia State Medical Association; also a dentist; aged 60; died recently, of heart disease.

William Pounce Chalker, Dothan, Ala. (licensed, Alabama, 1897); member of the Medical Association of the State of Alabama; aged 58; died suddenly, Nov. 27, 1930, of heart disease.

Frank McLean ⊕ Chenango Forks, N. Y.; Albany Medical College, 1896; for many years health officer of Fenton, Chenango and Barker; aged 58; died suddenly, Dec. 7, 1930, of heart disease.

Samuel Garvin Molinder ⊕ Dayton, Ohio; University of Cincinnati College of Medicine, Cincinnati, 1920; aged 35; died, Dec. 2, 1930, in the Miami Valley Hospital, of scarlet fever.

Clement Lee Slonaker ⊕ Culver, Ind.; Medical College of Indiana, Indianapolis, 1903; chief surgeon, Culver Military Academy; aged 55; died, Nov. 24, 1930, of pyonephritis.

Francis M. Hackleman, Rockport, Ind.; Eclectic Medical Institute, Cincinnati, 1871; aged 86; died, Dec. 2, 1930, in Chicago, of chronic myocarditis and arteriosclerosis.

Henry Clark Brainerd, Cleveland; University of Michigan Medical School, Ann Arbor, 1869; aged 85; died, Dec. 1, 1930, in the Charity Hospital, of myocarditis.

Charles P. Bolles, Wilmington, N. C.; University of Virginia Department of Medicine, Charlottesville, 1897; aged 56; was accidentally asphyxiated, Nov. 28, 1930.

William Kelsey, Monterey, Ind.; Indiana Medical College, Indianapolis, 1874; aged 95; was killed, Dec. 2, 1930, when his horse and buggy were struck by a train.

Cleon Carl Mason ⊕ Long Beach, Calif.; Johns Hopkins University School of Medicine, Baltimore, 1921; aged 42; died suddenly, Dec. 7, 1930, of coronary disease.

Newton S. Hubbell, Cedar Rapids, Iowa; Western Homeopathic College, Cleveland, 1865; aged 94; died, Nov. 28, 1930, in St. Luke's Hospital, of arteriosclerosis.

James Edson Miller, Washington, D. C.; King Eclectic Medical College, Des Moines, 1884; aged 69; died, Oct. 16, 1930, in the U. S. Naval Hospital.

William Franklin Hilsabeck, Windsor, Ill.; Rush Medical College, Chicago, 1872; aged 84; died, Dec. 5, 1930, as the result of a cerebral hemorrhage.

Benjamin Jacobs, Kansas City, Mo.; Kansas City Medical College, 1897; aged 65; died, Dec. 11, 1930, in Rochester, Minn., following an operation.

George Wenner, New York; Medical Department of Columbia College, New York, 1886; aged 65; died, Nov. 28, 1930, of arteriosclerosis.

James Wood Jordan, Beaverdam, Va.; Medical College of Virginia, Richmond, 1901; served during the World War; aged 53; died, Dec. 7, 1930.

Francis Monroe Jackson, Dawson Springs, Ky.; Louisville and Hospital Medical College, 1908; aged 60; died, Dec. 12, 1930, of nephritis.

Henry G. Armbruster, Steeleville, Ill.; Homeopathic Medical College of Missouri, St. Louis, 1881; aged 73; died, Dec. 3, 1930, of nephritis.

Emanuel Rosenberg ⊕ Cleveland; University of Budapest, Hungary, 1891; aged 62; died, Dec. 12, 1930, of pneumonia.

Elmon Joseph Noyes, Lovell, Maine; Medical School of Maine, Portland, 1885; aged 70; died, Oct. 11, 1930.

⊕ Indicates "Fellow" of the American Medical Association.

Bureau of Investigation

MORE MISBRANDED NOSTRUMS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

Antikamnia and Codeine Tablets.—The Antikamnia Remedy Company of St. Louis shipped in November, 1928, into Illinois a quantity of Antikamnia and Codeine Tablets that were declared misbranded. Analysis showed that each tablet contained 2.88 grains of acetanilid with caffeine, sodium bicarbonate and a small amount of codeine. The claims on the trade package were to the effect that it was an effective remedy for coughs, influenza, rheumatism, neuralgias, insomnia, menstruation pains, etc. These claims were declared false and fraudulent and applied in reckless and wanton disregard of their truth or falsity. In April, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16927; issued September, 1930.*]

Ak-No-Mor.—A. G. Luebert, Coatesville, Pa., shipped in January, 1929, into Delaware a quantity of Ak-No-Mor that was declared misbranded. The preparation came in the form of capsules, which on analysis were found to contain 3 grains of acetphenetidin, some aspirin and caffeine in each capsule. The statement on the label, that the remedy was a harmless substitute for narcotics and contained no harmful drugs, was declared false and misleading; the declaration of the presence and amount of acetphenetidin was in inconspicuous type and did not include a statement to the effect that the substance was a derivative of acetanilid; the curative claims, to the effect that the preparation was for neuralgia, toothache, influenza, lumbago, sciatica, neuritis and various other conditions, were declared false and fraudulent. In June, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16935; issued September, 1930.*]

Sargon.—The Sargon Laboratories of Dayton, Ohio, shipped in June, 1929, into Iowa a quantity of Sargon that was held to be misbranded. When analyzed, the product was found to be an alcohol-water solution of sugar, glycerin, extract of ox gall, a bitter drug, small amounts of an iron compound, sodium citrate and caffeine. The government declared that the claims that this preparation would build up deficient metabolism, restore the hemoglobin to normal, stimulate the action of the liver and gallbladder, increase bodily vigor and well-being, promote glandular activity, etc., etc., were false and fraudulent. In September, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16936; issued September, 1930.*]

Gauvin's Headache Wafers.—J. A. E. Gauvin of Lowell, Mass., shipped in March, 1929, into Maine a quantity of Gauvin's Headache Wafers that were declared misbranded. Analysis showed the wafers to contain acetanilid and sodium bicarbonate. The claims on the label, to the effect that the product was an effective remedy for neuralgia, influenza, nervousness caused by overwork, etc., were declared false and fraudulent. In August, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16930; issued September, 1930.*]

Hygem.—The Vita-Bac Corporation (Bloomfield Laboratories) of Bloomfield, N. J., shipped in June, 1929, into New York a quantity of Hygem that was declared adulterated and misbranded. Analysis showed the product to consist essentially of an emulsion of mineral oil, a small amount of casein-like material and water, flavored with peppermint oil. Bacteriologic examination showed that the preparation contained no viable acidophilus bacilli. The product was declared adulterated because of the claim that it contained acidophilus, when it did not; the curative claims, to the effect that it was a remedy for constipation, auto-intoxication, indigestion, etc., and that it would "cleanse the power plant" and "destroy the dangerous bacteria" that pass through the system, were declared false and fraudulent. In August and September, 1929, judgments of condemnation and forfeiture were entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16937; issued September, 1930.*]

Now.—R. D. Coulson of Indianapolis, Ind., shipped in February, 1929, into Texas 20 dozen bottles of Now, which were declared misbranded. The product was found to consist essentially of small amounts of menthol, camphor, oil of eucalyptus, licorice, alcohol, glycerin and water. The claims on the trade package, to the effect that this was a remedy for coughs, croup, influenza, pneumonia, hay fever, asthma, and various other conditions, were declared false and fraudulent. It was further declared misbranded for the reason that while it was labeled as containing 25 per cent alcohol, it contained only 17.8 per cent of alcohol by volume. In May, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16938; issued September, 1930.*]

Acquin.—The Clausen-Zoller Company of St. Louis, Mo., shipped in January, 1929, to Milwaukee, Wis., a quantity of Acquin Tablets that were declared misbranded. Analysis showed the tablets to contain acetphenetidin (phenacetine), aspirin and starch. The claims that it would not depress the heart and was a safe remedy, were declared false and misleading; it was further declared misbranded because the package failed to bear any statement giving the quantity or proportion of acetphenetidin. The curative claims, to the effect that it was a remedy for neuritis, neuralgia, influenza, painful menstruation, etc., were declared false and fraudulent. In June, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16940; issued September, 1930.*]

THE "SMEATON WAY" EYE DROPS

A relatively insignificant piece of medical swindling has recently been put a stop to by the postal authorities, through the issuance of a fraud order against Smeaton Way, Vincennes, Ind. It appears from the memorandum of the Solicitor of the Post Office Department to the Postmaster General that "Smeaton Way" was a name under which William D. H. Smeaton of Vincennes, Ind., was selling through the mails a preparation called "Itsgone-Eyedrops," which he claimed was a cure for all known eye diseases and even blindness.

Smeaton started business about January 1, 1930, and has advertised in several newspapers. Unfortunately, the names of the newspapers that were willing to help Smeaton fleece the public are not mentioned in the memorandum. Some of the claims made for Smeaton's Itsgone-Eyedrops were:

"They have restored eyesight to people totally blind, with cataracts on their eyes, from one to seventeen years."

"Also to people totally blind with a disease of the eyes known as amaurosis from one to twenty-eight years."

"Also to people totally blind, with granulated lids and ulcers, for thirteen weeks."

"People with eyestrain so bad that they had to stay in a dark room, have been able in thirty days to read and thread a fine needle without the aid of glasses."

"People seventy years old, after wearing glasses for forty years, can in ninety days see to read without the aid of glasses."

Itsgone-Eyedrops, it appears, were made out of honey, egg yolk, melted butter and water. The directions were for one drop or more to be put in each eye two or three times a day.

Smeaton is thirty-eight years old, has no medical training, knows nothing about the cause of trachoma, glaucoma, granulated eyelids or other diseases of the eye, has employed no physician or chemist, and claims to have discovered the preparation by experimentation. Smeaton admitted that a bottle of his "drops" cost him twenty cents; he sold it for $2!

On October 4, 1930, the Postmaster General, on the recommendation of the Solicitor, ordered the Postmaster at Vincennes, Ind., to return all letters addressed to "Smeaton Way," Vincennes, Ind., to the senders, after having stamped or written on the outside of each letter the word "Fraudulent."

Correspondence

PREVENTIVE VACCINATION AGAINST TUBERCULOSIS WITH B C G AND THE LÜBECK CASUALTIES

To the Editor:—Readers have been informed of the tragic casualties that occurred in Lübeck, in the spring of 1930, following vaccinations with a vaccine that had been prepared at the laboratory of the municipal hospital from subcultures of the B C G strain, issued by the Pasteur Institute in Paris. Before the German sanitary authorities had made known the results of their investigations into the matter, many papers were published, in which the B C G was held responsible for the mortality in Lübeck.

It is now known that the B C G cannot be held responsible for these accidents. The official statement issued by the German ministry of the interior, in particular the one dated September 10, and the thorough study of the B C G vaccination, contained in the reports of experts from various countries at the International Tuberculosis Conference at Oslo in August, provide precise information. The German ministry has published the following declaration:

> The B C G strain, sent to Lübeck by the Pasteur Institute, cultivated there in liquid mediums and which was not used for vaccine preparation, has been recognized as a pure culture of B C G, not virulent for guinea-pigs.
>
> Up to this day the investigation has proved that the B C G culture issued by the Pasteur Institute was in perfect condition and not virulent.

Professor Neufeld, director of the Robert Koch Institute, Berlin, has made the following statements in his report at Oslo (published in extenso in the *Deutsche medizinische Wochenschrift*, number 38, Sept. 19, 1930):

> It has been demonstrated by a great number of experiments that the B C G must be considered as an inoffensive strain. It does not determine progressive tuberculosis in animals. This opinion has been unanimously supported by the members of the B C G conference in 1928, and I myself do not know of a single case contradicting it. We know that S. A. Petroff claims to have obtained a virulent form of B C G by special culture conditions. Petroff has kindly forwarded a "dissociated" B C G culture to the Robert Koch Institute, on which R and S colonies were present. Both forms have been recognized in our laboratory as *virulent* tubercle bacilli of the *human* type.
>
> Petroff's last publication is not more convincing than the preceding ones. Moreover, according to experiments published by Petroff and Watson, guinea-pigs, inoculated with B C G, often die of progressive tuberculosis. *These results are in such flagrant contradiction with thousands of observations made in other laboratories that I can only explain them by experimental errors.* . . .
>
> As far as we actually know, living bacilli more virulent than B C G cannot be used in human vaccination, and B C G is our best weapon in this vaccination. It is the great merit of Calmette and Guérin to have put such a vaccine at our disposal. It is our duty to try every sufficiently sure and scientifically established remedy against this terrible disease. That is why I have asked the German authorities to try this vaccination on a bigger scale, especially in children particularly exposed to tuberculous contamination.

I knew for a long time that Petroff's cultures were contaminated with virulent human bacilli. The declaration of Professor Neufeld permits us to say that we cannot possibly rely on Petroff's experiments. It equally disposes of those exceptional experiments which seem to contradict the observations of hundreds of excellent biologists in different countries. It is now almost certain that such contradictory observations are due to spontaneous tuberculosis in the guinea-pigs employed, an eventuality much less exceptional than it has heretofore been supposed to be.

At the Oslo conference such manifold and precise information has been given on the innocuousness of B C G and on its influence on the decrease of general infantile mortality that one has a right to desire that this method of vaccination be introduced in general practice on a larger scale, and be regarded as a more efficacious weapon against tuberculosis than hygienic measures alone.

It has been established, first, that a so-called *paucibacillary* infection (i. e., an infection caused by a sufficiently small number of bacilli to remain latent) brings on allergy and resistance against ulterior virulent contaminations; secondly, that the extreme frequence of the presence of tuberculin allergy in adults bears evidence to the fact that most individuals are subject to paucibacillary or massive virulent infections; thirdly, that B C G, while perfectly innocuous, produces exactly the same protective effects as a very slight virulent infection. And so we may now ask if it is wise to abandon our young children to the uncalculable consequences of chance bacillary contaminations, as we used to do until now, and if the necessary economy of human lives does not impose certain measures capable of reducing the risks of natural contamination.

There is but one answer to this question: It is necessary to immunize children at birth with a tuberculosis virus that should be undoubtedly innocuous for them and for all animals.

Now, the perfect innocuousness of B C G has been actually demonstrated by a huge amount of experimental work and by more than a million vaccinations in the whole world since 1924 (288,000 in France and 112,000 in the French colonies up to Nov. 1, 1930).

Experiments have been made on a large scale in Europe (Belgium, Holland, Sweden, Norway, Poland, Russia, Roumania, Italy, Greece and Spain) and in North and South America (New York, Montreal, Rio de Janeiro, Montevideo and Buenos Aires), and they all have led to the conclusion that B C G is innocuous, that it never interferes with normal development, that mortality from tuberculosis in vaccinated children is reduced to nearly zero, and that vaccinated children are more resistant to most infantile diseases than nonvaccinated ones; this is why general infantile mortality is everywhere manifestly reduced by vaccination, often by as much as 50 per cent or even more.

The Swedish experiment is particularly convincing: in the province of North Bothnia, 4,009 children were vaccinated, from September, 1927, to May 1, 1930, of whom 1,347 were vaccinated in 1928 out of a total of 4,969 births; i. e., 27.1 per cent.

In 1929 the proportion of vaccinated with respect to the number of births was 38.8 per cent.

The general mortality in nonvaccinated children of 0-1 year in this province up to Jan. 1, 1930, has been 22.2 per cent, whereas it was but 6.6 per cent in vaccinated children of the same age.

For children of 1-2 years these figures are 2.8 per cent in nonvaccinated and 1.1 per cent in vaccinated ones.

In New York the effects of B C G on young children have been conscientiously studied by William H. Park, Kereszturi and Béla Schick. From December, 1926, to Jan. 1, 1930, 208 babies, born in hospitals from tuberculous mothers, have been vaccinated, and at the same time 350 children, born and brought up under the same conditions but not vaccinated, have been followed by the authors. The death rate from tuberculosis has been 8 per cent in the nonvaccinated, and 0.9 per cent in the vaccinated infants.

W. H. Park also, in his report at the Oslo conference, concludes that B C G is perfectly innocuous, and moreover causes evident resistance against other virulent contaminations.

This resistance is so generally observed, and it is so apparent, that it cannot possibly be denied. The innocuousness of B C G is also evident, because even the slightest virulence would manifest itself by a higher death rate in vaccinated individuals, whereas the contrary is observed everywhere.

Certain physicians hesitate to use a living vaccine because of the hypothetic eventuality of its spontaneous return to virulence. But this fear is unjustified, for nobody has ever succeeded, even by the most diversified laboratory artifices, in realizing such a return to virulence in B C G. Indeed, nobody has ever observed a living vaccine (Jenner's vaccine, Pasteur's vaccines against hydrophobia, anthrax) to turn suddenly into smallpox, hydrophobia or anthrax virus in human or animal organisms.

Everybody knows, moreover, that only living vaccines cause durable immunity, whereas viruses killed by heat, such as plague, cholera or typhoid vaccines, can immunize for only a brief time. This fact is particularly evident in tuberculosis, against which killed bacilli fail to immunize.

Therefore it is evident that antituberculosis vaccination with B C G, which can be so easily realized by mouth in new-born babies and by subcutaneous injection in nonallergic individuals of all ages, ought to be introduced in general practice by physicians and midwives in the United States as has been done in France and many other countries. This method not only facilitates the application of other measures of individual and social prophylaxis but undoubtedly contributes itself to reduce notably general infantile mortality in all the countries where it has been introduced.

B C G cultures are gratuitously delivered by the Pasteur Institute to the laboratories designated by the sanitary authorities of every country for the preparation and gratuitous distribution of the vaccine. In the United States the state laboratory of New York (director Dr. William H. Park) is so far the only one designated for this task.

This vaccine must not be offered for sale.

PROF. ALBERT CALMETTE,
Pasteur Institute,
Paris, France.

[NOTE.—The letter of Dr. Calmette was referred to Dr. Petroff, whose reply follows:]

To the Editor:—The recent criticism directed to certain studies that I have published during the past five years (*Am. Rev. Tuberc.* **19**:18 [Jan.] 1929) on the recovery of the virulence of B C G deserves a reply. These studies can be summarized in a few sentences: 1. If the original culture from the glycerinated potato-bile or Sauton medium is inoculated intravenously or intraperitoneally in doses of from 1 to 5 mg., a small number of the animals—from 2 to 5 per cent—will develop visceral lesions that cause the death of the animal if sufficient time is allowed. The disease could be passed through a series of animals. 2. I have successfully dissociated several B C G cultures that were obtained from various sources into R, which was nonvirulent, and S, which was virulent for guinea-pigs.

The first observation is in accord with that reported by Watson (*J. Am. Vet. M. A.* **71**:732 [Sept.] 1927; **73**:799, 1928), Hutyra (*Ztschr. f. Immunitätsforsch. u. exper. Therap.* **62**:74, 1929), Armengol (*La Clinica* **5**:321 [Nov.] 1928), Löwenstein (*Wien. klin. Wchnschr.* **39**:293 [Nov.] 1926), Korschum, Dwijkow and Gorochownikowa (*Centralbl. f. Bakt.* **111**:297 [March 8] 1929), Kirchner and Tiedemann (*Beitr. z. Klin. d. Tuberk.* **75**:327 [Sept.] 1930), Nobel, Chiari and Solé (*Ztschr. f. Tuberk.* **50**:24 [Feb.] 1928), Medlar and Sasano (personal communication), Malkani (*Tubercle* **11**:400 [July] 1930) and others. In regard to the second observation, Kraus (*Ztschr. f. Immunitätsforsch. u. exper. Therap.* **61**:454, 1929), Tzekhnovitzer (*Ann. de l'Inst. Pasteur* **42**:68, supp., 1928), Gerlach (*Ergebn. d. Hyg. Bakt. Immunitätsforsch. u. exper. Therap.*, 1930, p. 824) and Piasecka-Zeyland (*Ann. de l'Inst. Pasteur* **43**:1002 [Aug.] 1929) have reported dissociation only as far as colony topography is concerned. These authors failed to find a virulent variant in their cultures. To my knowledge, up to the present, only Begbie and Mackie of Edinburgh have fully corroborated my claims. These authors (personal communication) observed three types of colonies: (*a*) a nonvirulent type having the same structure as the one reported by me; (*b*) a second colony differing slightly from mine and pathogenic for guinea-pigs, and (*c*) an intermediate colony, which was only slightly pathogenic for guinea-pigs.

The successful repetition of the first two points depends on the time factor, which was pointed out by Watson. The successful dissociation depends on careful bacteriologic technic.

According to the experimental data submitted by Calmette and Guérin, the original culture after the isolation from a calf was pathogenic for cattle and rabbits, but after four years' cultivation on potato-bile medium it was no longer pathogenic for cattle and guinea-pigs but still was for rabbits and horses. Recently, Kraus (*Deutsche med. Wchnschr.* **52**:1855 [Oct. 31] 1930), discussing the stability of B C G, calls attention to this finding and further states that it is possible to increase the virulence of B C G to such a state that only some animal species are infected and not others. Kraus also calls the attention to the recent Hormaeche strain of B C G, which acquired pathogenicity for guinea-pigs, less for rabbits, and none at all for cattle. It seems that, at present, no definite rules can be applied for differentiation of human and bovine bacilli.

But why should this bovine organism be modified by environment, if the idea of fixed types of bacteria is correct? The B C G supplied by the Pasteur Institute today has apparently lost all of its original bovine characteristics and behaves more like a human type.

Recent studies on other bacteria have taught me that bacterial species are not fixed and may vary tinctorially and culturally and, more important, that virulence may be lost and regained. Is it possible that the tubercle bacillus alone is an exception to this rule?

In the spring of 1928, I mailed dissociated B C G cultures to Bruno Lange of Berlin and to F. Gerlach and Rudolph Kraus of Vienna. The dissociated culture was isolated from one that was brought to me by Dr. Lawrason Brown from Calmette's laboratory. These cultures were cultivated on gentian violet-egg medium of the same age and same batch. There were definite R and S colonies in each plate, and each shipment was accompanied with photographs describing and pointing out the two types of colonies so that the recipient would have no difficulty in picking out the proper colonies.

Kraus (*Ztschr. f. Immunitätsforsch. u. exper. Therap.* **61**:454, 1929) reported that the colonies supplied by me were in accord with my observations; namely, that the R did not produce progressive disease and that the S was pathogenic for guinea-pigs.

Lange (*Deutsche med. Wchnschr.* **56**:927 [May 30] 1930) reported that both of the colonies produced progressive tuberculosis in guinea-pigs. According to this author the culture was of human type for the reason that the two colonies developed progressive tuberculosis only in guinea-pigs and not in rabbits.

Gerlach (*Ergebn. d. Hyg. Bakt. Immunitätsforsch. u. exper. Therap.*, 1930, p. 824), on the other hand, with the same culture was not able to infect with either of these colonies.

The discrepancy of these three workers is unexplainable at present.

Any observer reporting an increase of virulence of B C G culture by animal passage has met the same objection: i. e., contamination with human bacilli, or spontaneous tuberculosis in guinea-pigs. The same criticism has been offered about cultures isolated either from the guinea-pig inoculated with B C G or from a baby that has been vaccinated with B C G cultures for the reason that they produce progressive disease only in guinea-pigs and not in rabbits. Such a conclusion based mainly on animal inoculations is unjustifiable for the reason that there are many intermediate types of bacilli that cannot be classified as either human or bovine.

Some of the most interesting observations showing the instability and differentiation of the tubercle bacillus are those reported by the British Tuberculosis Commission (Second Interim Report of the Royal Commission Appointed to Inquire into Relations of Human and Animal Tuberculosis, 1907, part 1).

The originator of B C G vaccination believed that no virus was fixed. At least that was what he reported in his own book, "Tubercle Bacillus Infection and Tuberculosis in Man and

Animals," of the year of 1923 (translated by Soper and Smith, Baltimore, Williams & Wilkins Company). Discussing the differentiation of the human and the bovine organisms, he says:

> However, it must be recognized that certain cultures show atypical characteristics as regards virulence and that it may be extremely difficult or impossible to establish their type (O. Malm). Here the opinion is justified that one is dealing with types which are poorly adapted to the bovine or human body [p. 290].

Evidently, at the time when the book was written, he was convinced that there were intermediate types of tubercle bacilli:

> In all of these cases, indeed, there is no certainty whatever that one is not dealing with bacilli whose bovine origin is relatively close. It may always be argued that these human strains, virulent for cattle, had original characters which were poorly defined or unstable and that this is the reason why the characters are still uncertain and why between the human and bovine types, as ordinarily defined, there exists a whole series of intermediaries which approach more or less either the one or the other [p. 293].

Summarizing the preceding few pages, he stated:

> It follows from this that we are not justified in inferring the duality of human and bovine tuberculous virus, as Robert Koch would have it. These types differ one from another only because they have more or less adapted themselves, through a series of successive cultural generations, to a human or bovine environment. And it cannot be conceived that cultures of human or bovine bacilli, attenuated by prolonged existence on artificial laboratory media and become more or less avirulent, constitute special types. In all of these cases we have to do with the same bacillus [p. 294].

The following passage is in total disagreement with the present stand of the author so far as differentiation of bovine and human bacilli is concerned:

> Such a discordance in the results of examinations, carried out with practically identical methods and based generally upon the trial of virulence for the rabbit, indicates how difficult it is to distinguish positively the human from the bovine type. In fact, O. Malm was quite correct in stating that it is hardly possible to determine the origin of a given strain with absolute certainty on the basis of its virulence; bacilli vary enormously according to the media on which they are grown and according to the animal species into which they are inoculated [p. 336].

And in this final passage, the author at that time believed that the bovine organism might mutate to a human type:

> If it is true, as an observation by Weber and Stefenhagen would indicate, that, in bone tuberculosis of children, the bovine bacillus retains its type characters of culture and virulence for several consecutive years (four years in the case cited by these authors), it is possible, as we have stated earlier, that the practically exclusive finding of human type bacilli in adult pulmonary tuberculosis is the result of a progressive adaptation to the body on the part of the infecting bacillus, originally bovine in type; that these originally bovine bacilli, having gained access to the human body in the early years of life, to bring about pulmonary tuberculosis only very much later, have gradually acquired the characters of the human type [p. 336].

I am under the impression that Professor Calmette still holds these views but only when certain issues are in question. More recently he and his collaborators (Calmette, Valtis and Saenz: THE JOURNAL, June 22, 1929, p. 2088), in discussing filtrable forms of the tubercle bacilli, report their ability to increase the power of such virus to become tuberculogenic by animal passage; but when discussing the B C G they completely ignore such a possibility. Reasoning from analogy, if such viruses can become virulent in a suitable animal environment, what then can prevent the B C G culture from regaining its pathogenicity?

No one is yet prepared to state definitely what was the error responsible for the Lübeck disaster. The various possibilities advanced by Friedberger (*Deutsche med. Wchnschr.* **56**:1300 [Aug. 1] 1930) are sound, and I am thoroughly in agreement with this author. Ludwig Lange's (*Ztschr. f. Tuberk.* **57**:305 [Nov. 5] 1930) statistical exposition, to my mind, speaks rather against the possibility of mixing the B C G or substituting a virulent human bacillus for it. One point that was brought out definitely and clearly is that the culture sent from the Pasteur Institute was probably not a virulent culture. Something, however, did happen to this culture in Lübeck, as it happened at Ujpest, a factory town adjacent to Budapest (*Lancet* **1**:1313 [June 14] 1930), and possibly in other places. The Lübeck accident happened under such conditions that the cases were reported and came to the notice of the public health authorities.

The criticism of Professors Calmette and Neufeld that the virulent element in the cultures observed by me is a contamination with virulent human tubercle bacillus is purely gratuitous. Lacking the slightest basis of evidential support, it deserves no more notice than would any other figment of the imagination. I challenge the statements. The safeguards against accidents have been controlled by many years of experience. I do not believe that my B C G cultures are contaminated and that the virulent colonies that I have dissociated or isolated from animal passage are contaminations with human tubercle bacilli. Using only the animal inoculation (rabbits) for differentiation, the results are not a proof pro grata that they are human bacilli. As Calmette and others have pointed out themselves, this method is not adequate for such differentiation. Hence, I feel that at present one cannot with certainty state that some tubercle bacilli are human and others bovine. All that can be stated now is that they are acid-fast bacilli from human or bovine sources.

At present I refrain from making any comment on Professor Calmette's statistical exposition but refer the reader to the analyses made by such competent statiticians as Greenwood (*Brit. M. J.* **1**:793 [May 12] 1928), Rosenfeld (*Wien. klin. Wchnschr.* **41**:800 [June 7] 1928), Báron (*Wien. klin. Wchnschr.* **41**:1167 [Aug. 9] 1928), Götzl (*Wien. klin. Wchnschr.* **41**:804 [June 7] 1928), von Berghaus (*Deutsche med. Wchnschr.* **56**:1771 [Oct. 17] 1930) and Blümel (*München. med. Wchnschr.* **77**:1978 [Nov. 14] 1930).

The latest studies of Hans Much (*München. med. Wchnschr.* **77**:2008 [Nov. 21] 1930) confirm my dissociation of B C G.

S. A. PETROFF, PH.D., Trudeau, N. Y.
Director of Research and Clinical Laboratory, Trudeau Sanatorium.

DOSAGE OF VIOSTEROL

To the Editor:—In reference to your editorials in THE JOURNAL, October 4 and November 22, I enclose a reprint which we believe offers some evidence for the view that vitamin D acts through the parathyroid glands, and that overdosage with viosterol is not without danger.

N. B. TAYLOR, M.B., Toronto.
Associate Professor, Department of Physiology, University of Toronto.

[COMMENT.—The first editorial points out that there is a wide margin between the therapeutic dose of viosterol and the amount which produces definitely pathologic results; that in view of the present caution exercised in dosage the Council on Pharmacy and Chemistry has deemed it advisable to increase the concentration of viosterol in oil and in fortified cod liver oil; and that the source of the increased calcium in the circulation after overdosage with viosterol is probably in the bones rather than in an increased absorption. The second editorial comment points out the probability, based on recent experiments, of separating the toxic effects from the antirachitic effects in irradiated ergosterol (viosterol). The involvement of the parathyroid glands in the action of viosterol is also questioned.

In the report submitted by the correspondent it is shown that the symptoms induced in the normal intact dog by overdosage with viosterol as well as the hypercalcemia and postmortem observations are identical with those present after large amounts of parathyroid hormone have been given. It is also reported that after the usual parathyroidectomy in which stray parathyroid tissue may still be present, the resulting tetany can be relieved by viosterol. On the other hand, after complete removal of all parathyroid tissue, not only was the resistance to overdosage of viosterol greatly increased over that observed after the ordinary parathyroidectomy, but the consequent tetany was less well controlled. These facts are interpreted to mean that the presence of intact parathyroid tissue is requisite for the production of hypercalcemia by viosterol. These conclusions are in essential agreement with an editorial in THE JOURNAL, April 12, 1930, page 1148.—ED.]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

INDICATION FOR OPERATION IN BILIARY FISTULA

To the Editor:—A woman, aged 50, was operated on more than three years ago with mastectomy, on suspicion of neoplasm. The microscopic report was cystic mastitis. Ten years previously she had been operated on for gallstones. About one month after the breast operation, the patient had colic pains in the upper right quadrant of the abdomen, with formation, later, of an abscess which opened in the intestine. Since then, with a few months' interval, there have been steady recurrences of the pains and the abscess. This, after a few attacks, burst through the old abdominal surgical scar; pus and a greenish liquid dripped out for a few weeks. An eminent surgeon consulted in the case is strongly opposed to any operative intervention. He says that peritoneal adhesions have saved the life of the patient; to break these adhesions would mean to endanger her life. Of course, statistics show a high rate of fatalities in operation for biliary fistulas. Could anything else be suggested? What is the abscess formation that has followed the last operation? Kindly omit name.

M.D., New York.

ANSWER.—Undoubtedly the operative condition of the breast can be disregarded entirely as far as the abdominal complaint is concerned. The symptoms are suggestive of an obstructive condition at the outlet of the gallbladder—probably a gallstone. This would result in an accumulation of secretion and possibly in an abscess which at one time may have ruptured into the intestine and again through the abdominal scar.

Courvoisier, in thirty-six cases in which the gallstones had gained access to the intestine, found that 74 per cent had perforated from the gallbladder into the duodenum and others at various points in the ileum or colon; consequently, a distended gallbladder or abscess would easily do the same thing.

Even if the gallbladder were largely removed, a small part left, or even the cystic duct, might dilate to produce these symptoms. Stones in the lower end of the cystic duct are easily overlooked, owing to its often being long and entering the hepatic duct on the posterior wall. In the absence of jaundice, this is the most likely explanation. However, one should not fail to examine the common duct carefully by palpation at least for stones, at operation.

Considering the age of the patient, if she is in good general condition there would seem to be a definite indication for operation, by which one might reasonably expect to relieve her of this serious condition. The operative risk is not great if done by one skilled in this type of surgery, and the danger would probably be less than that of permitting the condition to progress.

BRONCHIAL ASTHMA

To the Editor:—I have a nephew, aged 7 years, whose weight is 42 pounds (19 Kg.). He has had asthma since he was 2. Despite the full routine of tests, immunizations, nose and throat treatment, inoculations, medications and climate changes (he lives in Detroit), his condition is but slightly improved. His attacks are less frequent than they have been, but they occur about every two months, with more intensity in the warmer months of the year. Physically, he is emaciated, although he eats well; he is narrow chested, with a tendency to emphysema, and does not gain weight. During his sleep, he grinds his teeth. Will you please suggest treatment, and also to what the nocturnal teeth grinding may be attributed. What prognosis do you offer? Kindly omit name and address.

M.D., New York.

ANSWER.—This child of 7 years, whose asthmatic attacks date from 2 years of age, occurring less frequently than formerly but with greater intensity in the warmer months, presents in brief outline the history of typical bronchial asthma in children.

Most of these infants and children belong to that type of individual whom Czerny has grouped and described as having a constitutional make-up which renders them most liable to develop a syndrome characterized chiefly by attacks of eczema and later asthma. Such a history may be traced through different generations of a family and may occur in the various children of the same family. The condition has therefore both familial and hereditary tendencies.

The case under discussion, judging by the early age of onset, is probably of an asthmatic character. The asthmatic attacks may be brought on or accentuated by allergic sensibility. The subject may be sensitive to a variety of food proteins, to pollens, to animal emanations or to proteins of certain bacteria which are producing a focal infection. Although it is stated in the communication that the child has already undergone the various routine examinations, it might be well to test him again against the various pollens, since the attacks seem to be most intense in the warmer months.

It is also stated that change of climate has not brought relief. While this is unfortunately often true, still a change to a moderately high elevation, where uniformity of temperature, warmth and sunlight are available, will often result in marked amelioration of the conditions.

These children must be given a wholesome, well balanced diet. Often enough the protein skin tests will show them positive to so many of the common foodstuffs that a sustaining menu cannot be formulated. In this case, by the use of rational clinical judgment, the most obviously offending foods may be eliminated, still allowing a well balanced, sustaining diet to be prescribed.

Medication is nonspecific, yet relief may be found from various drugs in the individual case. During an attack lobelia, potassium iodide, hydriodic acid, sodium bromide, chloral hydrate, phenobarbital and the opiates have all given symptomatic relief. Ephedrine salts by mouth have proved themselves of value in many cases and ephedrine is a dependable drug. In severe attacks, hypodermic injections of epinephrine will give temporary relief and rest. Various inhalants have been employed, the most successful probably being those in which stramonium is burned.

While the condition may be long drawn out, the prognosis for ultimate recovery is not without hope. With increasing age and as maturity is approached, not a few of these little sufferers show a tendency to amelioration and gradually to a disappearance of their symptoms.

The nocturnal grinding of teeth is a coincidental symptom. While formerly nearly universally described as the principal symptom for worms, it is in reality one of the most common symptoms for nervous overfatigue in infants and children.

TREATMENT OF COUGH AFTER BRONCHITIS

To the Editor:—As a school physician, I am much interested in the best form of treatment for cough arising from acute and subacute bronchitis. I have, of course, used the standard old-time preparations, such as compound mixture of glycyrrhiza, ammonium chloride, terpin hydrate and codeine. Attention has been called to thiocol-Roche. I believe it is on the list of acceptable preparations of the Association. How much positive proof is there of its value? Would you outline for me in general what are the most helpful lines of treatment in this condition. Kindly omit name.

M.D., New Jersey.

ANSWER.—Thiocol-Roche (N. N. R.) is potassium guaiacolsulphonate, a compound analogous to potassium phenolsulphonate. As in a case of the phenol combination, the guaiacol is so firmly bound that a small quantity only of the aromatic body is set free in the system. The Council on Pharmacy and Chemistry has accepted thiocol as an administration form of creosote.

While it may seem a radical statement, children who cough should not be permitted to attend school, for their own good and for that of the other pupils, as school is the greatest of all infection exchanges and mouth spray the chief medium of exchange.

If a child that coughs has fever, even as little as 100 F., it should be kept in bed. This, by the way, is true also of adults. Fever means a loss of antibactericidal resistance, and possibly a life and death struggle ensuing if further lowering of resistance should occur. No matter what one may think of chilling in the etiology of the original attack, there is no doubt that a person whose heat regulating center is deranged, as evidenced by fever, is more prone to chilling and with it to further loss of resistance, than one whose heat center functions normally. Therefore, warmth, as uniform as possible, is the prime requisite in the treatment of colds and of acute coughs: the warmth of the house, if there is no fever; of the bed, if there is. And this does not mean heat and sweating, which is likely to do good only at the beginning of a cold and then only under proper safeguards against subsequent chilling, to which it predisposes.

The chief of all expectorants is water: without it most medicinal expectorants fail and, with an abundance of it, they may not be required. Nevertheless, they probably contribute, when wisely used, to a speedier evolution of the various stages of a bronchitis and to a more rapid recovery. The salines, chief among them ammonium chloride and sodium citrate, head the list of agents that may reasonably be expected to be of use in "loosening up" a cough; i. e., favoring drainage from the infected bronchial tree, provided they are given freely, frequently and with plenty of fluid. Sodium citrate, with its alkalizing tendency, might be especially valuable when there is fever with its ever-present threat of acidosis, which may still further lower resistance. Iodide, the most powerful of the saline expectorants, should not be employed until the acute stage is well over, because the iodism that may be induced by it may aggravate the symp-

toms. In the subacute stage, however, when expectoration is not yet free, it may act "like magic."

When the cough is "loose" and productive, none of these drugs are of any use; then aromatics may be of value. Inhalation of the volatile oils may produce a similar "stimulation" of healing of a subacute or chronic bronchitis, as tar does in skin diseases. Of the numerous aromatics that may possibly be of use when ingested with the hope that some of their educts may favorably affect the respiratory mucosa, terpin hydrate and creosote are probably the most important. The former is preferable because of ease of administration—best in capsules for adults and in powder with sugar for children. But creosote is the more potent, especially when given in ascending dosage up to the limit of tolerance, preferably administered as the carbonate shaken up with milk.

However, a cough that hangs on is not so much an indication for medicine as a challenge to determine why it does.

BASAL METABOLIC RATE

To the Editor:—1. What are the physiologic causes of an increased basal metabolic rate? 2. What are the pathologic causes of an increased basal metabolic rate? 3. With what other glands of internal secretion is the thyroid closely related? Will a derangement in one of these glands cause a secondary derangement in the other glands, the thyroid in particular? Will a carcinoma of the ovaries cause an increased basal metabolic rate? If printed, please omit name and address.

M.D., Pennsylvania.

ANSWER.—1. The metabolism is increased by work or activity of any kind and by the ingestion of food; but this increase gives a reading that is no longer basal. Basal metabolism means the metabolism of the body at rest and in the post-absorptive state, conditions that eliminate the effect of food and of activity. Any increased basal metabolism reading, then, could hardly be caused by a physiologic condition. It is, of course, to be remembered that the range of normal basal metabolism is quite wide, from —15 to +15 per cent. As yet, no one has been able to determine on a physiologic basis the significance of these variations in any given individual. Pregnancy is the one physiologic condition that increases basal metabolism.

2. The pathologic causes of increased basal metabolic rate are many: disturbances of the endocrine glands, especially the thyroid and pituitary, anemias, leukemias, fever, infection, high protein diet and perhaps decompensated heart disease.

3. The thyroid is certainly the gland most intimately connected with changes of the basal metabolic rate. There have been studies, not accepted by all scientific investigators, which seem to indicate some relationship between the thyroid and the other glands, particularly the pituitary and the gonads. The literature of this whole question of the interrelationship of the glands of internal secretion is confusing. Clinical types are described that are supposed to be characteristic of disturbances of particular glands as well as of mixtures, but again there is still an element of mystery present. Therefore, while it is probably true that derangement of any one gland may cause secondary disturbances in the others, particularly the thyroid, this cannot be stated as a definitely proved fact. A carcinoma of the ovaries should not per se cause an increase in the basal metabolism.

INDICATIONS FOR REPAIR OF HERNIA

To the Editor:—Is there any contraindication to doing a hernia repair operation (bilateral), under local anesthesia, on a hernia that is now being controlled by a truss, in a man, aged 65, who is in fair general health? The patient states that a surgeon advised him against having this operation done at his age for fear of recurrence. Please omit name.

M.D., Illinois.

ANSWER.—It is difficult to put an age limit on any patient for the repair of a hernia. It is much better to study the patient critically after the age of 60 or 65 years and to determine the extent and type of hernia before advising operation.

If a patient has a considerable number of years of life expectancy and is in good condition, he may be operated on, provided there is sufficient trouble from the hernia. Operation may be advised if the hernia is difficult to control with a truss, if the truss is producing more than ordinary irritation, or if there are attacks of pain or strangulation.

Patients who have a direct inguinal hernia, who are extremely fat or have weak abdominal muscles, are more likely to have a recurrence. Unless directly indicated, one should be cautious in operating on them.

One must always rule out a possible urinary obstruction from a stricture of the urethra or from an enlarged prostate, because there will almost surely be a recurrence of the hernia unless this is corrected before the hernia repair. One need not hesitate to repair the ordinary indirect inguinal hernia for fear of a recurrence if it is done along well established surgical principles. A strangulated hernia demands emergency operative repair at any age.

SUBJECTIVE SYMPTOMS IN THE MOUTH

To the Editor:—A well developed white woman, aged 33, weight 135 pounds (61 Kg.), came to me with the following complaints: Forty-eight hours previously, she noticed her lips beginning to chap. Thirty-six hours after the first symptoms, she noticed a "shrinking sensation" of the gum tissue of the maxilla and mucosa of the hard palate on the right side only. Forty-two hours after the first symptoms, the condition had progressed to the soft palate in the region of the uvula. The gum tissue of the lower arch, the mucosa of the hard palate on the left side, the tongue and throat had not been affected. She does not complain of pain, but describes a sensation something like the after-effects of burning the mouth with hot coffee. She has not been eating excessive amounts of fruits. She does not have a cold and to her knowledge has never had a herpes labialis. There has been no dental work in the last six months. The teeth are in excellent condition and the soft tissues of the mouth appear more normal. There are no symptoms of Vincent's infection or Vincent's angina. There is some evidence of herpes labialis. Microscopic examination shows the presence of a few spirochetes, a few streptothrices and other typical mouth organisms, but I could not find any fusiform bacilli.

R. E. CONWELL, D.D.S., Iowa City.

ANSWER.—Patients who complain of subjective symptoms in the mouth, such as burning of the mucous membrane, tingling sensations, numbness and dryness, tax the diagnostic and therapeutic resources of the practitioner to the highest degree, especially when objective changes are lacking or are of a minor character. Idiosyncrasies with relation to foods and drugs are often involved. The excessive use of condiments or hot foods may be a factor. Such symptoms are sometimes found early in the development of such conditions as anemia, cancer, leukemia, nephritis and diabetes. They may be related to a neighboring focus of infection, and in such a case as this the teeth, the nose and the accessory sinuses should be carefully studied to rule out such a possibility. The fact that this condition seems to be distinctly unilateral requires that this part of the examination be thorough. Functional disorders of the nervous system may have symptoms of this general character; indeed, it may be said that this condition is much more common in women than in men. In a considerable number of these cases the search for a definite etiologic factor is fruitless, and treatment in such cases is limited to the use of a cleansing, alkaline mouth wash and to the attempt to direct the attention of the patient away from the symptoms.

"TREATMENT OF FRIGIDITY"

To the Editor:—In Queries and Minor Notes (THE JOURNAL, November 8, p. 1446) you state in your answer to a question that the treatment of frigidity in the female is usually entirely unsatisfactory.

Many, if not most, of the cases of frigidity in the female are due to the husbands. Most men have obtained their premarital knowledge of the sexual act from intercourse with prostitutes. In the case of the prostitute, the man is not at all interested in the sexual gratification of his partner. Many men when they enter matrimony carry this experience with them and do not consider the wife at all in this regard. If the man continue to play the courtier after marriage as much as before, and see to it that his spouse is fully aroused sexually before proceeding with the act, he will soon be able to develop the sexual sense in the most modestly brought up female.

Another frequent cause for this condition is partial impotence in the male, as evinced by rapid and even premature ejaculation. Still another frequent cause is the practice of withdrawal, in which condition the male withdraws before he himself has experienced the orgasm and certainly before his wife possibly could. In many of these cases the wife remains excited and nervous after the act and finally gets disgusted with the entire procedure.

Of course there are some cases of absolute frigidity, which is generally congenital in origin and often associated with other symptoms of lack of sexual development, such as sterility, infantile uterus, or delayed and scanty menstruation; but these cases are in the minority.

MAX HUHNER, M.D., New York.

MALARIA IN INDIANA

To the Editor:—As a former Hoosier, as well as a student of entomology, I was interested by the query and answer in THE JOURNAL, October 25, relative to the occurrence of malaria in Indiana.

The question and the answer to it implied that it was necessary to account for the occurrence in that state in some other way than by transmission by the anopheles mosquito. As a matter of fact, both of the species of anopheles most commonly implicated in the transmission of malaria in this country, *Anopheles quadrimaculatus*, and *Anopheles punctipennis*, occur in Indiana. There is no reason to suppose that any of the culicine mosquitoes are concerned in transmission of the disease, under such circumstances.

WILLIAM A. RILEY, University Farm, St. Paul.
Chief, Division of Entomology, University of Minnesota.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 12, 1931. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery, Ala.

ARIZONA: Phoenix, Jan. 6-7, 1931. Sec., Dr. H. P. Mills, 14 N. Central Ave., Phoenix, Ariz.

CALIFORNIA: Los Angeles, Feb. 2-5, 1931. Sec., Dr. C. B. Pinkham, 420 State Office Bldg., Sacramento, Calif.

COLORADO: Denver, Jan. 6, 1931. Sec., Dr. W. W. Williams, 224 State Capitol Bldg., Denver, Colo.

DIST. COLUMBIA: Regular, Jan. 12, 1931. Washington, D. C. Sec., Dr. W. C. Fowler, District Bldg., Washington, D. C.

ILLINOIS: Chicago, Jan. 13-15, 1931. Supt., Mr. P. B. Johnson, Dept. of Registration and Education, Springfield, Ill.

MINNESOTA: Minneapolis, Jan. 6-7, 1931. Basic Science. Sec., Dr. E. T. Bell, 110 Anatomy Bldg., Minneapolis, Minn. Regular, Minneapolis, Jan. 20-22, 1931. Sec., Dr. E. J. Engberg, 524 Lowry Bldg., Minneapolis, Minn.

NATIONAL BOARD: Parts I and II held in any class A medical school on Feb. 11-13, 1931. Part III given by subsidiary boards in eighteen cities, Jan. 12-14, 1931. Dir., Mr. Everett S. Elwood, 225 South 15th St., Philadelphia, Pa.

NEW YORK: Albany, New York City, Syracuse and Buffalo, Jan. 26-29, 1931. Chief, Mr. H. J. Hamilton, Albany, N. Y.

NORTH DAKOTA: Grand Forks, Jan. 6-9, 1931. Sec., Dr. G. N. Williamson, Grand Forks, N. D.

OREGON: Portland, Jan. 6-8, 1931. Sec., Dr. C. J. McCusker, 1014 Medical Dental Bldg., Portland, Ore.

PENNSYLVANIA: Philadelphia, Jan. 6-10, 1931. Sec., Mr. C. D. Koch, Harrisburg, Pa.

SOUTH DAKOTA: Pierre, Jan. 20-21, 1931. Dir., Dr. H. R. Kenaston, Homesteel, S. D.

VERMONT: Burlington, Feb. 9, 1931. Sec., Dr. W. Scott Nay, Underhill, Vt.

WASHINGTON: Seattle, Basic Science, Jan. 8-9, 1931. Regular, Jan. 12-13, 1931. Dir., Mr. Charles Maybury, Olympia, Wash.

WISCONSIN: Madison, Jan. 13-15, 1931. Sec., Dr. R. E. Flynn, 315 State Bank Bldg., La Crosse, Wis.

WYOMING: Cheyenne, Feb. 2, 1931. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne, Wyo.

Illinois July Examination

Mr. P. B. Johnson, superintendent of registration and education of Illinois, reports the written and practical examination held at Chicago, July 8-11, 1930. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Two hundred and forty-six candidates were examined, 226 of whom passed and 20 failed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent
Stanford University School of Medicine	(1929)	80
Chicago Medical School	(1930)	75, 75, 76, 77, 77, 77, 77, 78, 78, 78, 79, 79, 80, 80, 80, 80, 81, 82, 82, 83, 84
Loyola University School of Medicine	(1929)	82, 83,
	(1930)	75, 76, 76, 76, 76, 76, 76, 76, 77, 77, 77, 77, 77, 77, 77, 78, 78, 78, 78, 78, 78, 79, 79, 79, 79, 79, 79, 79, 80, 80, 80, 80, 80, 80, 80, 80, 80, 81, 81, 81, 81, 81, 81, 82, 82, 82, 82, 82, 83, 85, 86
Northwestern University Medical School	(1927) 78, (1930)	78,
		78, 78, 79, 79, 79, 80, 80, 80, 80, 81, 81, 81, 81, 81, 82, 82, 82, 82, 82, 82, 82, 83, 83, 83, 84, 85, 86
Rush Medical College	(1929) 79, 83, 85, (1930)	76, 77, 78,
		78, 78, 79, 79, 81, 82, 82, 82, 82, 83, 84, 84, 86, 87, 87
University of Illinois College of Medicine	(1929)	82, 84,
	(1930)	75, 75, 76, 76, 76, 76, 77, 77, 77, 77, 77, 77, 78, 78, 78, 78, 78, 78, 78, 79, 79, 79, 79, 79, 79, 79, 79, 79, 79, 80, 80, 80, 80, 80, 80, 80, 80, 80, 80, 80, 81, 81, 81, 81, 82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 85, 86, 86, 86, 87, 88
Harvard University Medical School	(1928)	77
St. Louis University School of Medicine	(1929)	75, 76
Washington University School of Medicine	(1915)	77,
	(1927) 80, (1928) 79, (1929) 82	
University of Nebraska College of Medicine	(1928)	79
New York Homeopathic Med. College and Flower Hosp.	(1928)	83
University of Buffalo School of Medicine	(1926)	79
Jefferson Medical College	(1929)	77
University of Tennessee College of Medicine	(1929)	78
Medical College of Virginia	(1929)	79
Marquette University School of Medicine	(1930)	75, 81
University of Wisconsin Medical School	(1929)	82
Karl Franzens University Faculty of Medicine	(1924)	79 *
University of Vienna Faculty of Medicine	(1923)	79
University of Manitoba Faculty of Medicine	(1929)	83
Royal College of Physicians and Surgeons, England	(1923)	75
University of Athens Faculty of Medicine	(1923)	76
Dragomanov Institute Faculty of Medicine	(1926)	75 *

FAILED		
College	Year Grad.	Per Cent
Howard University School of Medicine	(1926)	76 †
Chicago Medical School	(1929) 70, (1930) 66, 71,	77 †
Loyola Univ. School of Med.	(1930) ‡, 72, 73, 74, 76,† 76,§	79 †
Northwestern University Medical School	(1930)	74
Rush Medical College	(1930) 73, 74,	78 §
University of Illinois College of Medicine	(1930) 75,§	79 §
German University of Prague Faculty of Medicine	(1921)	73
Central University of Spain Faculty of Medicine	(1928)	72 *

Mr. Johnson also reports 30 physicians licensed through reciprocity with other states and 6 by the endorsement of credentials at the same meeting. The following colleges were represented:

LICENSED BY RECIPROCITY		
College	Year Grad.	Reciprocity with
Howard University School of Medicine	(1911)	W. Virginia
Northwestern Univ. Med. Sch.	(1926) Wisconsin, (1929)	Iowa
Rush Medical College	(1929) California, (1930)	W. Virginia
Indiana University School of Medicine	(1929, 3)	Indiana
State University of Iowa College of Med.	(1926, 2) (1927)	Iowa
Tufts College Medical School	(1920)	Penna.
University of Minnesota Medical School	(1923) (1926)	Minnesota
St. Louis University School of Medicine	(1917) (1926)	Missouri
Washington University School of Medicine	(1904) (1927) Tennessee, (1907) (1928) (1929) Missouri	Texas
Creighton University School of Medicine	(1928)	Nebraska
Western Reserve University School of Medicine	(1927)	Ohio
University of Oklahoma School of Medicine	(1918) (1929)	Oklahoma
Jefferson Medical College	(1926)	Alabama
University of Tennessee College of Medicine	(1929)	Tennessee
University of Alberta Faculty of Medicine	(1925)	Michigan
University of Athens Faculty of Medicine	(1922) *	Michigan
University of Barcelona Faculty of Medicine	(1914)	Texas

ENDORSEMENT OF CREDENTIALS		
College	Year Grad.	Endorsement of
Loyola University School of Medicine	(1930)	U. S. Navy
University of Illinois College of Medicine	(1930)	U. S. Navy
Harvard University Medical School	(1923) (1927)	N. B. M. Ex.
University and Bellevue Hospital Medical College	(1928)	N. B. M. Ex.
University of Pennsylvania School of Medicine	(1916)	U. S. Army

* Verification of graduation in process.
† Failed in clinical examination.
‡ Failed in clinical examination; no grade given.
§ Grade below 60 in one or more subjects.

South Dakota January and July Examinations

Dr. H. R. Kenaston, director of the Division of Medical Licensure of South Dakota, reports the oral, written and practical examinations held at Huron, Jan. 21-22, 1930, and Deadwood, July 15-16, 1930. Each examination covered 15 subjects and included 105 questions. An average of 75 per cent was required to pass. Seventeen candidates were examined and passed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent
Northwestern University Medical School	(1930)	87.6, 88.9, 89.6, 91.2
Rush Medical College	(1929)	89, 90.3
University of Illinois College of Medicine	(1930)	82.6
State University of Iowa College of Medicine	(1928)	89.3
University of Minnesota Medical School	(1928)	89.9
Washington University School of Medicine	(1915)	90.8
Creighton Univ. School of Medicine	(1924) 89.8, (1929)	86.1, 90.1, 90.8
Jefferson Medical College	(1924)	88.7
Marquette University School of Medicine	(1930)	85.7
University of Wisconsin Medical School	(1928)	91.8

Dr. Kenaston also reports 11 physicians licensed through reciprocity with other states and 2 by the endorsement of credentials from January to July, 1930. The following colleges were represented:

LICENSED BY RECIPROCITY		
College	Year Grad.	Reciprocity with
University of Illinois College of Medicine	(1925)	Minnesota
State Univ. of Iowa College of Med.	(1911) (1926) (1927)	Iowa
Tulane University of Louisiana School of Medicine	(1907)	Louisiana
University of Minnesota Med. Sch.	(1927) (1929, 2) (1930)	Minnesota
Vanderbilt University School of Medicine	(1913) (1923)	Tennessee

ENDORSEMENT OF CREDENTIALS		
College	Year Grad.	Endorsement of
Harvard University Medical School	(1927)	N. B. M. Ex.
Jefferson Medical College	(1917)	N. B. M. Ex.

Oklahoma September Examination

Dr. J. M. Byrum, secretary of the Board of Medical Examiners of Oklahoma, reports the written examination held at Oklahoma City, Sept. 9-10, 1930. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Two candidates were examined and passed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent
Washington University School of Medicine	(1930)	88
Baylor University College of Medicine	(1930)	87

Dr. Byrum also reports 10 physicians licensed through reciprocity with other states and 1 by the endorsement of credentials at the same meeting. The following colleges were represented:

LICENSED BY RECIPROCITY		
College	Year Grad.	Reciprocity with
State University of Iowa College of Medicine	(1929)	Iowa
University of Kansas School of Medicine	(1930)	Kansas
Univ. of Louisville School of Med.	(1909) Arkansas, (1916)	Kentucky
Tulane University of Louisiana School of Medicine	(1925)	Louisiana

Central Medical College of St. Joseph	(1903)	Missouri
Washington University School of Medicine	(1929, 2)	Missouri
University of Cincinnati College of Medicine	(1930)	Ohio
Vanderbilt University School of Medicine	(1919)	Tennessee

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement of
Northwestern University Medical School		(1930)	N. B. M. Ex.

Book Notices

AN INTRODUCTION TO MALARIOLOGY. By Mark F. Boyd. Cloth. Price, $5. Pp. 437, with 82 illustrations. Cambridge: Harvard University Press, 1930.

The author rightly remarks that there are few problems in which a broad outlook is more essential and more difficult of attainment than in malaria control. The present book attempts to outline this broad outlook. It grew out of a cooperative course on malariology given in Rio de Janeiro in 1925 by the National Department of Public Health of Brazil and the Rockefeller Foundation. An introductory chapter gives in outline the high spots in the history of the disease and its geographic distribution. In the second chapter, under the title of natural history of malaria, are considered such questions as sources of infection, relapses and resistance, splenomegaly, various factors in infection of mosquitoes and man, various biologic factors in the life of mosquitoes influencing carriage of the infection, and malaria prevalence. Chapter III gives the material and methods for making malaria surveys, together with the methods for a critical analysis of the data. Chapter IV, on the natural history of anophelines, considers the insect vectors from the standpoint of morphology, identification, geographic distribution, life cycles, general physiology and ecology. The final chapter gives the methods for anopheline surveys, including various field and laboratory methods for studying the mosquitoes, methods for determining malaria carriers, and methods for identifying blood meals. The volume fills a real need, because heretofore the information has been widely scattered or contained in part in various books relating to malaria in localized areas. In spite of the fact that some parts, particularly under the natural history of malaria, are incompletely considered, the book as a whole is admirably planned and contains a wealth of accurate factual data that will be of great aid not only to the beginner but also to the specialist in malaria control. A particularly helpful feature is that the text is fully documented with bibliographic references.

DIE DIATHERMIE. Von Dr. Josef Kowarschik, Primararzt und Vorstand des Institutes für physikalische Therapie im Krankenhaus der Stadt Wien. Seventh edition. Cloth. Price, 16.80 marks. Pp. 243, with 145 illustrations. Berlin: Julius Springer, 1930.

The first part of the book is devoted to a discussion of the physics involved in the production of the high frequency current. Illustrations are shown of the passage of the current between electrodes of various sizes and varying depths of tissue. The path of the current between two, three and four electrodes and the point of concentration between these multiples are also given. Excellent ideas can be gleaned from the hookups and construction methods of apparatus, although those in this country differ from those in use by the author. The ingenious electrodes invented and used by the author are described and in many cases represent improvements over the methods in common use in this country. The wide experience of the author is drawn on in giving the dosage for the various conditions treated. Here the author shows by illustration the position of the patient, the position of the part undergoing treatment and the position of the electrodes. A chart is appended giving the size of the electrodes and the amperage to be given in the administration of diathermy to any part of the body. A good portion of the book is devoted to a discussion of local and general diathermy. The conditions treated are taken up by anatomic systems, each disease is specifically discussed, and the rationale of the use of diathermy as well as the results obtained are given. In the last portion of the book roentgen therapy in conjunction with diathermy and electrocoagulation is dealt with, and although the space given these two subjects is small, a great deal of information can be found in this chapter by those who are interested in this form of therapy.

THE UNITED STATES DEPARTMENT OF AGRICULTURE: ITS GROWTH, STRUCTURE AND FUNCTIONS. By M. S. Eisenhower, Director, and A. P. Chew, Assistant to the Director, Office of Information, with the Assistance of Officials in all the Bureaus and Offices of the Department. United States Department of Agriculture, Miscellaneous Publication No. 88. Paper. Price, 25 cents. Pp. 147. Washington, D. C.: Supt. of Doc., Government Printing Office, 1930.

This publication is intended to answer many questions regarding the Department of Agriculture. The department is one of ten major executive departments of the federal government supervised and controlled by the Secretary of Agriculture, assisted by an assistant secretary, by directors of scientific work, regulatory work, extension work, personnel and business administration, and of information, and by the department solicitor. The department units are the Bureaus of Agriculture, Economics, Animal Industry, Biological Survey, Chemistry and Soils, Dairy Industry, Entomology, Home Economics, Plant Industry, Public Roads, and Forest Service, the Grain Future Administration, Plant Quarantine and Control Administration, and the Weather Bureau. The department is a service institution for the entire nation with duties affecting all agricultural interests and many nonagricultural interests. Its activities are divided into six general classes: (1) research, (2) extension and information, (3) eradication and control of plant and animal diseases and pests, (4) service activities, such as weather and crop reporting, and forest and wild life refuge administration, (5) the administration of regulatory laws, and (6) road construction. All activities are coordinated, planned and carefully directed to be of effective present and future service. The structures of the department and of its units are individually outlined in simple diagrammatic form. The functions, plan of operation, prominent past accomplishments, major problems under investigation and immediate future projects of the various bureaus and units receive separate mention and discussion. The publication presents the enormousness of the task in the service of agriculture and mankind being rendered by the Department of Agriculture.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Herausgegeben von W. Kolle, R. Kraus und P. Uhlenhuth. Lieferung 44, Band VIII: Verruga peruviana. Oroyafieber. Von Prof. Dr. H. da Rocha Lima. Bartonella. Von Priv.-Doz. Dr. E. Lauda. Fleckfieber. Von Prof. Dr. R. Otto und Dr. H. Munter. Das Rocky-Mountain-Spotted-Fever. Von Prof. Dr. F. Breinl. Fünftagefieber. Von Prof. Dr. H. Werner. Läuse als Krankheitsüberträger. Von Prof. Dr. A. Hase. Third edition. Paper. Price, 31 marks. Pp. 1049-1344, with 70 illustrations. Jena: Gustav Fischer, 1930.

This issue of the Handbuch reaches a high level of attainment. Rocha Lima's fine article on verruga peruviana and Oroya fever is followed by Lauda's comprehensive discussion of the animal infections with *Bartonella*. Lauda recognizes nine species of *Bartonella*, including the human form (*Bartonella bacilliformis*). The major portion of the issue is taken up with Otto and Munter's masterly article on typhus, which is of great value to all students of this disease. Breinl's article on Rocky Mountain spotted fever is also excellent. Still another rickettsia infection, trench fever or five-day fever, is dealt with in this issue, and the number concludes with a summary of what is known about the agency of the louse in disseminating infection, with emphasis on the biologic relations of these "minor horrors of war."

MEDICAL GYMNASTICS AND MASSAGE IN GENERAL PRACTICE. By Doctor J. Arvedson, Arvedson's Gymnastic Institute, Stockholm. Translated and edited by Mina L. Dobbie, M.D., B.Ch., Medical Officer, Chelsea College of Physical Education. Third edition. Cloth. Price, $2.50 net. Pp. 298. Philadelphia: P. Blakiston's Son & Company, Inc, 1930

Medical gymnastics undoubtedly has a place in the treatment of certain disorders. For posture defects, for deformities and for inflammations of the muscles, nerves and joints, such treatment tends to hasten recovery and relieve symptoms. In this book are described many morbid conditions that may respond to gymnastics and massage. The methods of treatment are outlined but the various exercises are not described in detail. The author has fallen into that error which so often occurs in presenting a special type of therapy—the error of attempting to make the treatment cover too wide a field. It is difficult to understand how patients with pharyngitis, gastric catarrh and pleurisy will be benefited by gymnastics. However, it is well that all physicians have some knowledge of the scope of medical gymnastics, and this book will aid in supplying it.

STAMMERING AND ITS PERMANENT CURE: A TREATISE ON INDIVIDUAL-PSYCHOLOGICAL LINES. By Alfred Appelt, Ph.D. Third edition. Cloth. Price, $2.25. Pp. 227. New York: E. P. Dutton & Company, Inc., 1930.

In this edition the work to a large extent has been rewritten. There is a good summary of the previous theories and practices concerning the nature and treatment of stammering (a term used in this book synonymously with stuttering). Then follows a discussion of the mechanism of speech, with a succeeding chapter on the pathology of stammering. There is then given a presentation of Alfred Adler's views on "individual-psychology," and it is about these views that the author thereafter proceeds to elaborate his conception of the etiology of stammering, its therapeutics and its prophylaxis. Appelt believes in the psychic causation of stammering. Its basis is the dread of speaking, and certain inner psychic resistances. He traces stammering to discouragement and insists that for the cure there is but one word; namely, courage. Although there are various aspects to the problem of stammering that are not touched on in this book, it is an excellent presentation of a conception of stammering which, even though not telling the full story, will be found to be of considerable help in the understanding and management of this difficult speech disorder.

STRÜMPELL-SEYFARTH LEHRBUCH DER SPEZIELLEN PATHOLOGIE UND THERAPIE DER INNEREN KRANKHEITEN FÜR STUDIERENDE UND ÄRZTE. Band II. Twenty-ninth and thirtieth edition by Dr. med. et Phil. C. Seyfarth, a. o. Professor (für innere Medizin) an der Universität Leipzig. Paper. Price, 25 marks. Pp. 991, with 221 illustrations. Leipzig: F. C. W. Vogel, 1930.

This is simply a reprinting of the second volume of the preceding edition with identical text and paging. Even minor alterations such as were made in the first volume of this new edition (reviewed in THE JOURNAL, Aug. 16, 1930) are absent. The only change is a new plate, Taf. II, facing page 144. In the twenty-eighth edition this has roentgenograms of the normal lumbar part of the spine and the same region ankylosed and atrophied. The new plate contains these two illustrations reduced in size and two others not shown heretofore: one illustrating spondylitis deformans of the lumbar vertebrae; the other, tuberculous thoracic spondylitis. This volume, in addition to diseases of the nervous system, treats of diseases of the urinary organs, muscles, blood and hematopoietic organs, diseases of metabolism, and the disorders at present ascribed to a lack of vitamins or to an improper dietary balance of such substances. Except for a chapter on the vegetative nervous system, its neuroses, and diseases of the cervical sympathetic system, introduced in the twenty-seventh edition two years ago, consideration of diseases of the nervous system remains as Strümpell left it when he died in 1925. Certainly a great deal recently learned about some diseases such as poliomyelitis, encephalitis and multiple sclerosis merits some notice if this standard treatise is to retain the enviable position it has long occupied. It is also possible that the results of some of the late investigations of renal disease, uremia and disorders of the ductless glands deserve further mention. However, if such additions are actually called for and should be furnished, according to the practice in past revisions they would probably occupy but a few lines or short paragraphs in small print, altogether a minute detail in the huge amount of information in the two volumes accepted as reliable for so many years and in all parts of the world where modern medicine is practiced.

ORAL DISEASES: A PRACTICAL TREATISE OFFERING DIAGNOSTIC AND THERAPEUTIC AID TO THE PRACTITIONER OF MEDICINE AND DENTISTRY. By James L. Zemsky, D.D.S., Attending Oral Surgeon to the Midtown Hospital, N. Y. Cloth. Price, $8. Pp. 402, with 414 illustrations. Brooklyn: Physicians & Surgeons Book Company, 1930.

This textbook, designed for practitioners and those taking postgraduate courses in minor oral surgery, is in the form of short notes based on clinical histories and rather loosely arranged in chapters. It is generously illustrated and the cuts are original as well as supplied with unusually complete descriptions. Many of these illustrations are reproductions of roentgenograms, others are made from photographs or drawings, and one is from a photomicrograph of a stained section. The cuts of a few of the larger roentgenograms are not satisfactorily reproduced; otherwise the illustrations are more than adequate. Owing to the loose arrangement there is some tendency to repetition—an example is the duplication in figures 137 and 406. In the discussion of epulis, no distinction is made between the fibrous and the giant cell types. The relationship between adamantinoma and multilocular cyst is not clearly brought out. It would seem that too much confidence is placed in the diagnosis of Vincent's stomatitis by stained smears from the mouth. While it is agreed without reservation that the author's condemnation of the old fashioned poultice in the treatment of mouth infections is warranted, one cannot accept his prejudice against the use of heat, since many successful clinicians believe in its efficacy in suitable cases. Owing to its form and content, this book cannot take the place of a systematic textbook on this subject, but it can be recommended as a worth-while book for collateral reading and study. The chapter concerned with prevention and management of broken needles is worthy of careful study by every practitioner in this field.

PRINCIPLES OF HYGIENE. By Thomas A. Storey, Ph.D., M.D. Part 1, Constructive Hygiene. Fifth edition. Part 2, Defensive Hygiene. Second edition. Cloth. Price, $3.50. Pp. 475, with 37 illustrations. Stanford University: Stanford University Press, 1930.

This book has been prepared for and is dedicated to the college student. In part I, on constructive hygiene, the contents are based on the "constructive hygiene of the single cell." The subjects discussed include heredity, nutrition, excretion, physical exercise, play and rest. These are discussed from a scientific point of view, in a logical and clear manner. Part II contains a discussion of what the author calls defensive hygiene. This is dealt with from two angles, one being "autonomic defensive hygiene" and the other "voluntaristic." The hazards concerned with heredity, heritage, food, play, accidents, chemical poisonings and micro-organisms are discussed. The author evidently regards the college student as an intelligent and thinking individual and does not try to dose him with predigested facts. Explanations of the various subjects discussed are given so far as knowledge permits. The book can be enthusiastically recommended to teachers of hygiene in colleges.

Medicolegal

Naturopathy as the Practice of Medicine

(State v. Miller (N. D.), 229 N. W. 569)

The defendant, a naturopath named J. H. Miller, was convicted in the district court, Emmons County, of practicing medicine without a license and appealed to the Supreme Court of North Dakota. Miller described himself as "Dr. J. H. Miller" in advertisements in which he claimed to be able to explain how to prevent diseases, how incurable diseases might be cured and how to cure gallstones and appendicitis without the use of the knife. The evidence showed that he examined patients and prescribed certain medicines for them, for which a fee was charged.

Miller admitted that he received fees from patients, but claimed that he did not charge them, only told them that they could give or not as they wanted. He admitted that he used the term "Dr." but that he "had in mind that people would think he was a doctor of divinity." He admitted that he used a stethoscope to determine what was wrong with his patients, that he listened to their heart beats, tested their blood, studied it, and reported to the patients their condition, but contended that what he did was "under an established tenet of the Seventh Day Adventist" church and therefore within the exemption in the medical practice act relating to the practice of Christian science or other religious tenets. While the practice of religious tenets is not prohibited by the medical practice act, said the court, if one in connection with such practice administers or prescribes a medicine, or assumes the title of physician, then he cannot claim exemption. Religious tenets cannot be used as a shield to cover a business undertaking, said the court.

When one diagnoses disease and prescribes and applies any therapeutic agent as a remedy, he is, in a broad sense, practicing medicine. To "prescribe" means more than suggestion or opinion. It means to direct the use of a medicine. Where one claims to be able "to explain how . . . incurable diseases may be cured," as Miller did in this case, it is not surpris-

ing, said the court, that some may be credulous enough to believe, and where such a credulous one comes to have his ailments diagnosed, his ills discovered, the proper remedy given, and the claimant undertakes this, makes his diagnosis, studies the illness, directs the use of certain medicines, and furnishes them for that purpose, either directly or indirectly, the latter must be considered as practicing medicine. The medical practice act was enacted for the protection of the public health against the ignorant, charlatan and impostor. It is confined to the practice of medicine as a science and is aimed at those who profess to be what they are not. It does not pretend to interfere with a nurse, a minister or a priest who furnishes assistance, advice or instruction, or with the narration of the values of time honored specifics.

Whether a remedy prescribed and furnished is harmless, or has any effect whatsoever, or what its ingredients may be, is not material. Even a food may be a medicine "if it be administered and employed for that purpose." *State* v. *Bresee*, 137 Iowa 673, 114 N. W. 45, 47, 24 L. R. A. (N. S.) 103. While the term "medicine," in a law regulating the sale of medicine, ordinarily would not include distilled water, milk or bicarbonate of soda, yet when the term is used with reference to prescriptions given by one diagnosing diseases and prescribing remedies, these may become medicines in the sense used. To prescribe and furnish water and peppermint "to settle the stomach" or water and soda "to relieve gas" is prescribing and furnishing as a medicine.

The trial court did not err in refusing to define naturopathy for the jury, for Miller was not charged with practicing naturopathy but with practicing medicine. If he was guilty of so practicing, it was immaterial how naturopathy may be defined or whether or not it is a part of any religious practice.

The act here involved, continued the supreme court, is aimed at one holding himself out to be or assuming the title of a physician. In treatment of diseases the terms "doctor" and "physician" are practically synonymous. A "physician" is one who has received the degree of doctor of medicine, so that the terms are used interchangeably. Miller's explanation of his use of the term "Dr.," that he "had in mind that people would think he was a doctor of divinity," was neither ingenuous nor ingenious, said the court. There was nothing in the record to indicate that Miller had ever received the degree of doctor of divinity from any institution. It is true, said the court, that the term "Dr." may mean physician, dentist, veterinary surgeon, or doctor of philosophy, divinity or law. It is for the jury to say from the evidence whether, by assuming this title, Miller held himself out, or wanted the public to believe him to be a doctor of medicine.

After reviewing the entire record, the supreme court found no reversible error, and the judgment of the trial court, denying a new trial, was affirmed.

Roentgen-Ray Burns and Res Ipsa Loquitur

(Waddle v. Sutherland (Miss.), 126 So. 201)

During the course of eighteen months, the defendant, a physician, administered seven or eight roentgen-ray treatments to the plaintiff's legs. The last treatment resulted in severe burns on both legs, which necessitated their amputation. The circuit court, Prentiss County, gave judgment for the physician and the patient appealed to the Supreme Court of Mississippi, Division B.

The patient contended that the trial court erroneously instructed the jury that in deciding whether or not the treatment given by the physician was done in a proper manner and with ordinary care and skill, and whether or not there was any negligence on the part of the physician in the use of the x-ray machine, they were to consider only the testimony of those who themselves possess the skill required to administer such treatments. The patient argued that this instruction excluded from the consideration of the jury all evidence in the case except that of the experts and was therefore in error. The legality of this instruction, the Supreme Court said, depends in some degree on whether the trial court erred in submitting to the jury, at the instance of the patient, the doctrine of res ipsa loquitur. The trial court told the jury, in substance, that if the evidence showed that the plaintiff's injuries were the proximate result of roentgen-ray burns inflicted on him by the physician, and if they believed from the evidence that, when a proper x-ray machine is used with reasonable care, such burns as were received by the patient were not the natural and probable result of the treatment, then the fact that the patient was so burned, resulting in the loss of his legs, should be taken into consideration by the jury in determining whether or not the injuries were the result of the negligence of the physician. There is a diversity of opinion, said the Supreme Court, as to whether the doctrine of res ipsa loquitur applies in a case of this character. The following cases hold that it does apply: *Lewis* v. *Casenburg*, 157 Tenn. 187, 7 S. W. (2d) 808, 60 A. L. R. 254; *Shockley* v. *Tucker*, 127 Iowa, 456, 103 N. W. 360; *Jones* v. *Tel. Co.*, 118 Minn. 217, 136 N. W. 741; 40 L. R. A. (N. S.) 485; *George* v. *Shannon*, 92 Kan. 801, 142 P. 967, Ann. Cas. 1916B, 338; *Evans* v. *Clapp* (Mo. App.), 231 S. W. 79; *Hamilton* v. *Harris* (Texas Civ. App.), 223 S. W. 533; *Johnson* v. *Marshall*, 241 Ill. App. 80. A contrary view is held by the courts of Arkansas, Pennsylvania, Maryland, Virginia and Indiana.

Res ipsa loquitur, continued the court, means that the facts of the occurrence warrant the inference of negligence. "But it is evidence to be weighed, not necessarily to be accepted as sufficient; that they (the facts) call for explanation or rebuttal, not necessarily that they require it; that they make a case to be decided by the jury, not that they forestall the verdict. Res ipsa loquitur, where it applies, does not convert the defendant's general issue into an affirmative defense. When all the evidence is in, the question for the jury is whether the preponderance is with the plaintiff." *Sweeney* v. *Erving*, 228 U. S. 233, 33 S. Ct. 416, 57 L. Ed. 815, Ann. Cas. 1914D, 907; 5 Wigmore on Evidence (2d Ed.) Sec. 2509; *Gulf & S. I. R. Co.* v. *Odum*, 133 Miss. 543, 98 So. 60. The principle is clearly and correctly stated, said the court, in 20 Ruling Case Law 187 as follows:

> More precisely, the doctrine res ipsa loquitur asserts that, whenever a thing which produced an injury is shown to have been under the control and management of the defendant, and the occurrence is such as in the ordinary course of events does not happen if due care has been exercised, the fact of injury itself will be deemed to afford sufficient evidence to support a recovery, in the absence of any explanation by the defendant tending to show that the injury was not due to his want of care.

The instructions relative to this doctrine, said the Supreme Court, simply told the jury that if the evidence showed certain facts, then there followed the prima facie presumption that the plaintiff's injury was caused by the negligence of the physician, and that such presumption should be considered, along with the other evidence in the case. These instructions embodied a sound principle of law, applicable to the particular facts of this case. By the other instruction, however, the trial court told the jury, in effect, that in considering and deciding the issues of fact, they were confined alone to the evidence of experts. The doctrine of res ipsa loquitur, and the evidence of both the patient and his wife, were thereby necessarily excluded from the consideration of the jury. While it is true that all instructions given in a case should be read together and should be construed to modify and to add to one another, if an instruction is given which in express and positive terms excludes from the consideration of the jury material evidence, such an instruction is controlling, and is misleading to the jury. There is no reconciling it with the other instructions. In a case depending on expert testimony alone, said the court, such an instruction would be proper; but this is not that kind of a case. This is a case where there is nonexpert testimony as well as expert testimony bearing on the issues. The instruction, therefore, was not only erroneous but calculated to mislead the jury.

For the error committed in giving this instruction, the judgment of the trial court was reversed and the case remanded.

Society Proceedings

COMING MEETINGS

American Orthopsychiatric Association, New York, February 20-21. Dr. George S. Stevenson, 370 Seventh Ave., New York, Secretary.

American Social Hygiene Association, New York City, January 23-24. Dr. William F. Snow, 370 Seventh Avenue, New York City, General Director.

Pacific Coast Surgical Association, Victoria, British Columbia, February 27-28. Dr. E. L. Gilcreest, 384 Post Street, San Francisco, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Medical Sciences, Philadelphia

180: 597-744 (Nov.) 1930

*Treatment of Pernicious Anemia with Desiccated, Defatted Stomach. C. C. Sturgis and R. Isaacs, Ann Arbor, Mich.—p. 597.
*Treatment of Pernicious Anemia with Extract of Fish Liver. J. E. Connery, New York.—p. 603.
Mitosis in Myeloblasts in Peripheral Blood. W. A. Groat, Syracuse, N. Y.—p. 607.
*Radiation Therapy of Polycythemia Vera. G. T. Pack and L. F. Craver, New York.—p. 609.
*Effect of Amyl Nitrite on Size of Heart and Width of Aortic Shadow as Determined Roentgenologically. W. A. Brams and H. A. Strauss, Chicago.—p. 618.
*Streptococcus Viridans Endocarditis in Children. C. B. Leech, Baltimore.—p. 621.
*Auricular Fibrillation and Flutter in Metastatic Growths of Right Auricle. A. M. Fishberg, New York.—p. 629.
*Analysis of Nine Hundred and Eighteen Cases of Bacillary Dysentery Treated with Specific Serum. P. T. Lantin, Manila, P. I.—p. 635.
*Bacterial Hypersensitivity of Intestinal Tract. S. E. Dorst and R. S. Morris, Cincinnati.—p. 650.
*Gumma of Liver: Ten Cases. J. Friedenwald and T. H. Morrison, Baltimore.—p. 656.
*Renal Glycosuria with Ketosis During Surgical Complications. F. N. Allan and F. R. Vanzant, Rochester, Minn.—p. 670.
*Acute Interstitial Pancreatitis in Diabetic Coma: Two Cases. A. G. Foord and B. D. Bowen, Buffalo.—p. 676.
Epinephrine Test and Cholesterol Determination in Diagnosis of Borderline Hyperthyroidism. J. W. Hinton, New York.—p. 681.
Problems in Diagnosis and Treatment of Thyrotoxicosis. F. E. Ball, Chicago.—p. 687.
Low Basal Metabolism Following Lobar Pneumonia Associated with Marked Undernutrition. A. H. Gordon and I. M. Rabinowitch, Montreal, Canada.—p. 695.
*Metastatic Abscesses of Brain. H. L. Parker, Rochester, Minn.—p. 699.

Treatment of Pernicious Anemia with Desiccated, Defatted Stomach.—Sturgis and Isaacs found that desiccated, defatted, whole stomach is effective in inducing and maintaining a hematopoietic remission in patients with pernicious anemia. From 7 to 10 Gm. of the dried substance daily, representing from 50 to 67 Gm. of the fresh organ, have been found effective. A clinical dosage of 10 Gm. for each million red blood cells deficit per cubic millimeter offers a wide margin of safety. The response is similar to that following liver extract, and the average weekly increase in the number of red blood cells is about 500,000 per cubic millimeter during the first eight weeks.

Treatment of Pernicious Anemia with Extract of Fish Liver.—An aqueous extract of fish liver which was administered by Connery in adequate dosage (from 60 to 90 cc.) to patients suffering with pernicious anemia can induce a reticulocyte response and an increase in the red cells and hemoglobin. Subjective and objective improvement followed and was comparable to that seen in patients with pernicious anemia treated with whole mammalian liver or with adequate amounts of potent liver fraction.

Radiation Therapy of Polycythemia Vera.—Pack and Craver report four cases showing that erythremia with splenomegaly can be profitably treated palliatively by irradiation with radium and roentgen rays. The treatment should be directed toward the bone marrow rather than the spleen. The symptoms of plethora are relieved, the general health is improved and life is prolonged, but these measures are not capable of preventing the usual fatal termination of the disease.

Effect of Amyl Nitrite on Size of Heart and Width of Aortic Shadow.—The size of the cardiac and the aortic shadow was studied roentgenologically by Brams and Strauss in a series of twenty-one patients before and after administration of amyl nitrite. The group studied included six normal persons and fifteen showing clinical evidence of arteriosclerosis, with and without hypertension. The transverse diameter of the heart shadow was reduced after amyl nitrite in eighteen of the twenty-one persons studied. The presence or absence of arteriosclerosis or hypertension seemed to be of minor importance in these changes in diameter. The width of the aortic shadow was increased in thirteen of the twenty-one patients after amyl nitrite. This result also seemed to be independent of the condition of the peripheral vessels or degree of blood pressure.

Streptococcus Viridans Endocarditis in Children.—Leech summarizes descriptions that appear in the literature of *Streptococcus viridans* endocarditis along with an analysis of fifteen previously unreported cases in children proved by blood culture or necropsy. Three of these occurred under the age of 5 years. Mention is made of a *Streptococcus viridans* septicemia without endocarditis occurring in an infant, aged 15½ months.

Auricular Fibrillation and Flutter in Metastatic Growths of Right Auricle.—Three cases are described by Fishberg in which secondary malignant growths in the right auricle were accompanied by auricular fibrillation or flutter. In the first of these cases, the involvement of the right auricle by the tumor was suspected during life; in the two succeeding cases this diagnosis was considered probable.

Bacillary Dysentery Treated with Specific Serum.—From the record of the 2,259 cases of bacillary dysentery studied by Lantin, it is observed that serum treatment is in general effective. He notes the encouraging results obtained from serum administration by rectum (enema), but says it is still untimely to give a definite conclusion regarding the absolute efficacy of this method on account of the limited number of cases treated. The results, however, are encouraging.

Bacterial Hypersensitivity of Intestinal Tract.—A definite relationship between a well recognized group of clinical symptoms and bacterial hypersensitization of the enteric tract has been demonstrated by Dorst and Morris. This sensitization is revealed by intradermal reactions and suggests that the so-called normal flora is frequently found playing a decidedly abnormal part. Desensitization by repeated small injections of the "active" strains results in both clinical improvement and a gradual disappearance of skin sensitivity. Sodium ricinoleate detoxifies many organisms in the enteric flora in vitro, as demonstrated by the disappearance of skin reactions on the injection of strains which before detoxification have given marked reactions. There is worthy evidence to suggest that sodium ricinoleate administered by mouth exerts a detoxifying action on the enteric flora in vivo.

Gumma of Liver.—The treatment of this condition, according to Friedenwald and Morrison, consists in the administration of iodides and mercury. The effect of these remedies is extremely favorable. The masses, ascites and other symptoms disappear, and the liver and spleen rapidly diminish in size. The administration of arsphenamine is dangerous and its use is contraindicated. They report ten cases.

Renal Glycosuria with Ketosis During Surgical Complications.—Three cases of renal glycosuria reported by Allan and Vanzant show clearly that increase in the excretion of sugar may occur during the presence of a complication such as surgical operation or infection. The excretion of sugar may become so great that ketosis may develop unless care is taken to provide for the ingestion of sufficient dextrose to maintain the utilization of adequate balance. In this behavior renal glycosuria imitates diabetes mellitus. The mechanism involved, however, is entirely different. In the former case there is apparently increased permeability of the kidneys, and in the latter increase in the defect in utilization of dextrose appears to be the important factor.

Acute Interstitial Pancreatitis in Diabetic Coma.—Two fatal, fulminating cases of diabetic coma in young adults with necropsy observations are reported by Foord and Bowen. The chief pathologic finding in each of these cases was an acute diffuse interstitial pancreatitis, which was probably a factor in the precipitation of coma. No source of the infection could

be determined. In one of the cases there was histologic evidence of a high degree of disturbance in lipid metabolism, as manifested by a huge liver which showed extreme fatty metamorphosis, the deposit of lipid substance in the abdominal lymph nodes, spleen and kidney, and by lipemia.

Epinephrine Test and Cholesterol Determination in Diagnosis of Borderline Hyperthyroidism.—Hinton asserts that as an aid in the diagnosis of borderline hyperthyroidism the epinephrine test, with the leukocyte and differential count added, has not been of any assistance in making a diagnosis. The test seems to be so delicate that any patient with a thyroid enlargement will give a positive reaction unless a definite hypothyroidism is present. The cholesterol observations have not been reduced in this series of twenty-six cases, regardless of the type of goiter.

Metastatic Abscesses of Brain.—Twenty cases of metastatic abscess of the brain were studied clinically by Parker. The diagnosis had been established either by necropsy or by surgical exploration. The cases were classified in three groups. In group 1 were three cases in which the abscesses were secondary to an overwhelming or progressive general septic process; in group 2 were fourteen cases secondary to pulmonary or pleural suppuration, and in group 3 were three cases secondary to an original septic process that had apparently healed but the signs of cerebral suppuration had appeared later and progressed to menace the life of the patient. The prognosis depends entirely on the severity and progress of the original infection. In group 1 the condition was hopeless. In group 2 it was grave, but in some of the cases might have been modified by operation. In group 3, surgical treatment at a favorable time was possible and the outcome favorable. The course of metastatic abscesses of pleural or pulmonary origin was much shorter than that of abscesses due to other causes. This no doubt depended largely on the debility of the patient. The clinical signs and symptoms, however, differed little. The severity of the original infection added a complicating feature, often making the diagnosis extremely difficult. In ten of the twenty cases a single abscess was situated in one or the other lobe of the cerebrum. In many of these a certain degree of encapsulation was present but rupture into the ventricle nevertheless occurred readily. In the other ten cases the brain was the seat of multiple foci of suppuration.

American Journal of Syphilis, St. Louis

14: 433-578 (Oct.) 1930

Granular Transformation of Spirochaeta Pallida in Aortic Focal Lesions. A. S. Warthin and R. E. Olsen, Ann Arbor, Mich.—p. 433.
*Study Based on Personal Follow-Up Results in Syphilis Clinic, of Patient's Reasons for Lapse in Treatment. J. H. Pugh, J. H. Stokes, L. A. Brown and D. Carnell, Philadelphia.—p. 438.
*Late Syphilis: Early Treatment. J. F. Madden, Ann Arbor, Mich.—p. 451.
Standard Treatment for Early Syphilis. W. R. Houston, Augusta, Ga.—p. 462.
*Acute Arsphenamine Collapse: Case. G. J. Busman and A. R. Woodburne, Pittsburgh.—p. 477.
*Arsenical Pigmentation of Skin: A Cutaneous Complication of Treatment for Syphilis: Case with Histologic Findings. F. A. Diasio, New York.—p. 483.
Attempt to Demonstrate Passive Transfer of Arsphenamine Hypersensitiveness. H. J. Templeton and L. E. Skilling, Oakland, Calif.—p. 487.
Syphilis of Tongue and of Nasal Walls and Faces: Two Cases. C. W. Lane and G. D. Reeves, St. Louis.—p. 492.
Standardization of Cholesterinized Alcoholic Beef Heart Antigen for Use in Complement-Fixation Procedures Employing Warm Preliminary Incubation. B. S. Levine, Hines, Ill.—p. 500.
Standardization of Wassermann Test. R. Gilbert, Albany, N. Y.—p. 506.

Follow-Up Results in Syphilis Clinic.—The Syphilis Clinic of the University of Pennsylvania School of Medicine in the University Hospital is a small fee, part-pay clinic serving a mixed white and colored population, most of which comes from adjacent sections of the city of Philadelphia. In equipment and personnel it is above the average, being served by a full time staff of specialists in an environment fairly well suited to individualization, at hours, however, when many of the more responsible types of working patients find it impossible to attend. The results of follow-up through correspondential methods, with an apparently ineffective public health support, were approximately 30 per cent returns on all patients followed. The installation of personal follow-up by workers and an automobile, direct in the case of infectious patients, and after one letter in other cases, resulted in a doubling of the effectiveness of the return of lapsed patients to treatment (64 per cent). The cost of this doubling of efficiency was, however, at least four times that of the correspondence method, which makes it doubtful whether a clinic unaided by special private funds, as this one was, or unaided by state cooperation, could hope to utilize the personal method. Pugh et al. conclude, therefore, that it is more than suggested that follow-up should become a function of an active social arm of the public health services rather than a matter for private initiative. The personal follow-up described by the authors made it possible to determine that financial difficulties, unsuitability of hours, shortcomings of the clinic personnel in establishing rapport and educating its patients, and painful or incommoding reactions to treatment are, in varying proportions depending on the method of analysis, the overwhelmingly prevalent causes for the failure of patients with syphilis to continue under treatment and supervision until discharged. Between 50 and 60 per cent of patients lost through these faults in management can be recovered by personal follow-up, and 85 per cent of the reasons for lapse included in the entire survey are amenable to some degree of preventive adjustment. A limited experience with compulsion methods does not encourage the authors to believe them effective at least as they have seen them administered and leads them to emphasize the need for study and improvement of the clinic, its methods and its operation in serving its clientele, rather than a mere resort to externally applied legislation and force.

Early Treatment of Late Syphilis.—The essential points brought out by Madden's study are these: By far the most important factor in the cause of late manifestations of syphilis is the lack of or inefficiency of treatment during the early stages of the disease. Only two of a total of 500 cases had anything like energetic treatment during the first year. Even in these two the rationale of the treatment was open to question. Physicians as a group know too little about the treatment of either early or late syphilis. The choice of drugs, their method of administration, the amount and length of time the drugs were given, all point to inadequate training on the part of the practitioner. It is suggested that more time, under competent teachers, be devoted to the diagnosis and treatment of syphilis in medical schools.

Acute Arsphenamine Collapse.—Busman and Woodburne report the case of a woman, aged 56, who had a four-plus positive Wassermann reaction in both lipoid and cholesterolized antigens. Four decigrams of arspenamine "old salvarsan" were ordered and through an error the four decigrams of "old salvarsan" were mixed in 10 cc. sterile distilled water and given into the left median basilic vein with the usual Luer syringe technic. The solution had not been neutralized nor was it properly diluted. The patient almost immediately became cyanotic, was seized with a spasm of severe choking cough, broke into a cold sweat and collapsed. She had severe cramps in the left arm. Ten minims of epinephrine chloride solution, 1:1,000, was injected into the deltoid muscle at once and the symptoms of collapse were somewhat relieved. One gram of sodium thiosulphate in 10 cc. sterile water was given intravenously. The patient was then moved to a bed in the hospital and packed in hot water bottles and blankets. Epinephrine chloride solution, 1:1,000, 10 minims, was repeated and 1,000 cc. of Fisher's solution was started by enteroclysis. The cough was extremely painful and almost continuous. Pneumonia developed and the patient had a stormy time. She presented the picture of a severe embolic pneumonia of the right lower lobe with a distressing cough, and a chemical thrombosis of the left median basilic vein to the shoulder. She eventually made a complete recovery. The Wassermann test was negative in both the lipoid and cholesterol antigen; the Kahn test also was negative. The authors are of the opinion that most acute arsphenamine deaths are analogous to their case and and that their case would have gone on to a fatal termination without the prompt administration of sodium thiosulphate intravenously and the 10 minims of 1:1,000 epinephrine chloride hypodermically. After the acuteness of the reaction has subsided, the patient should be

thoroughly alkalized and given daily intravenous sodium thiosulphate injections, Fisher's solution by vein or bowel and such other treatment as is indicated in the particular case.

Asenical Pigmentation of Skin.—Diasio reports the case of a white man who while under treatment for syphilis developed a dermatitis exfoliativa. Apparently, sulpharsphenamine had been used. The erythrodermia was followed by a generalized pigmentation of the skin. Associated with the pigmentation were dystrophy of the nails, partial alopecia of the scalp and a congestive dermatitis of the hands.

Archives of Ophthalmology, Chicago

4: 453-620 (Oct.) 1930

Relation of Teeth to Diseases of Eye. W. H. Wilmer, Baltimore.—p. 453.
Inclusion Bodies in Artificially Induced Conjunctivitis. S. R. Gifford and N. K. Lazar, Chicago.—p. 468.
Cystic Degeneration of Retina. B. Samuels, New York.—p. 476.
Mosher-Toti Dacryocystorhinostomy. E. B. Spaeth, Philadelphia.—p. 487.
Tumors of Optic Nerve. R. R. Grinker, Chicago.—p. 497.
Benign Melanoma and Melano-Epithelioma of Choroid. H. P. Wagener and W. L. A. Wellbrock, Rochester, Minn.—p. 509.
Paralysis of Extra-Ocular Muscle After Spinal Anesthesia. J. Levine, New York.—p. 516.
Exactly Appositional Sutures in Cataract Operation. C. B. Walker, Los Angeles.—p. 521.
Late Postoperative Separation of Choroid. G. S. Derby, Boston.—p. 530.
Imbalance of Vertically Acting Extra-Ocular Muscles. H. C. Smith, Nashville, Tenn.—p. 533.
Shortening Extra-Ocular Muscle by Tucking: New Instrument. W. P. Speas, Hickory, N. C.—p. 545.

4: 621-802 (Nov.) 1930

Treatment of Detached Retina by Searing Retinal Tears. J. Gonin, Lausanne, Switzerland.—p. 621.
Acuity of Binocular Depth Perception in Hemianopia. E. V. L. Brown and P. C. Kronfeld, Chicago.—p. 626.
Central Nervous System Control of Ocular Movements and Disturbances of This Mechanism. H. A. Riley, New York.—p. 640.
Modification of Gonin's Surgical Method of Treatment of Detachment of Retina. C. E. Finlay, Havana, Cuba.—p. 662.
Atypical (Upward) Coloboma of Choroid. C. E. Finlay, Havana, Cuba.—p. 668.
Rôle of Lens Antigen and Uveal Pigment in Production of Hereditary Anomalies of Eye. F. A. Davis and H. M. Smith, Madison, Wis.—p. 672.
Optic Atrophy in Paget's Disease. R. Aebli, New York.—p. 691.
Significance of Changes in Vessels of Fundus. A. J. Bedell, Albany, N. Y.—p. 695.
Small Tumor of Iris Which Caused Secondary Glaucoma. A. Knapp, New York.—p. 720.

Relation of Teeth to Diseases of Eye.—Wilmer advises that, in many serious ocular lesions, roentgenograms should be taken of all the teeth. Even then, pus pockets or a degenerating pulp in an anomalous root may be overlooked. Crowned, devitalized, badly discolored and pulpless teeth should be under suspicion in patients who have a chronic uveal inflammation. Occasionally the extraction of badly infected teeth seems to cause for a short time a temporary exacerbation of the ocular inflammation, and occasionally serious eye complications have followed. In many cases of serious inflammation of the eye, infected teeth may be associated with other foci of infection, such as the sinuses and tonsils. In such cases it is impossible to say just how much the teeth have contributed to the cause of the eye lesion, but their evil influence should be removed. Even when a definite general toxemia exists, as in the case of syphilis and tuberculosis, the patient should be treated for sepsis of the mouth, because the general toxemia seems to sensitize the eye tissues to infection existing in even distant foci. The great preponderance of lesions of the vascular uveal tract resulting from dental sepsis suggests the blood stream as a definite means of transmission of infection to the eye. The ocular lesions from dental sepsis may be the result of a slow and general sensitization of the delicate eye tissues to the diluted or nonvirulent bacteria or their toxic substances rather than a sudden overwhelming infection. The reports of reflex ocular neuroses of dental origin are too numerous to admit of any doubt of their existence. The laboratory proof of pathogenic micro-organisms in the affected eyes of patients suffering from dental sepsis has not been found; but from the hundreds of clinical observations reported, one must believe that infected teeth and many ocular inflammations have a close causal relation. The proper care of the teeth is one of the most important factors in the present-day public health program and in the scheme for the conservation of vision.

Archives of Otolaryngology, Chicago

12: 413-560 (Oct.) 1930

Physiology of Hearing. A. B. Luckhardt, Chicago.—p. 413.
Masking Effects of Interfering Tone on Deafened Ear. J. Guttman and L. B. Ham, New York.—p. 425.
*Agranulocytic Angina: Case with Apparent Recovery. J. A. Babbitt and T. Fitz-Hugh, Jr., Philadelphia.—p. 439.
*Primary Carcinoma of Trachea. F. E. Figi, Rochester, Minn.—p. 446.
Early Stages of Otosclerosis. S. R. Guild, Baltimore.—p. 457.
Method of Choice for Correction of Hump Nose. J. N. Roy, Montreal, Canada.—p. 484.
*Deformity of Face Caused by Nasal Allergy in Childhood. W. W. Duke, Kansas City, Mo.—p. 493.
Bones as Overlooked Foreign Bodies in Lung: Ten Cases. C. L. Jackson, Philadelphia.—p. 499.
Spontaneous Pneumothorax Complicating Cardiospasm. H. G. Wood and P. P. Vinson, Rochester, Minn.—p. 508.
*Electrosurgical Extirpation of Tonsils. L. J. Silvers, New York.—p. 511.
New Wall Board. L. A. Kempff, Los Angeles.—p. 524.
Use of Hexylresorcinol in Treatment of Vincent's Angina. H. Butler, Bangor, Me.—p. 525.
Instrument to Control Hemorrhage After Tonsillectomy. A. W. Shewman, New Castle, Pa.—p. 526.
Plastic Surgery. J. E. Sheehan, New York.—p. 527.

Agranulocytic Angina.—Babbitt and Fitz-Hugh report a case with apparent recovery. The patient was a woman, aged 26, who seemed to be in a moribund state when first seen, with the leukocyte count down to 600, polymorphonuclears totally absent, an extreme ulceration and necrosis of the mouth resulting in the loosening of some teeth and exfoliation of bone. When last seen (ten months after recovery) she was doing active nursing with an efficient alveolar apparatus. The patient's history shows incidents of shock. Several years before admission she had "Vincent's angina," from which she recovered. She was rather exsanguinated a year prior to her illness by a ruptured ovarian cyst, requiring transfusion and an emergency operation; of particular interest is the fact that during this emergency her leukocytes responded with the usual polymorphonuclear leukocytosis. The present attack immediately followed the extraction of a left upper molar tooth with very little bleeding, under gas anesthesia. The patient was literally bombarded with the three conventional lines of treatment: irradiation of the long bones, frequently repeated transfusion and ceaseless vigilance in tropical oropharyngeal attention. A definite connection was assumed with the Vincent's organism, which was found occasionally in smears. The alveolar margins above and below were filled with massive necrotic sloughs, which at first increased under treatment but later showed encouraging response. In addition, the patient was given liver extract, cod liver oil, calcium and large amounts of orange juice.

Primary Carcinoma of Trachea.—Five cases are reported by Figi. One of the patients has remained well for more than a year after treatment, which consisted of destruction with surgical diathermy, following exposure of the growth by tracheotomy, together with irradiation subsequently, which offers the best prognosis.

Deformity of Face Caused by Nasal Allergy in Childhood.—Duke describes a typical deformity of the bones of the face caused by perennial nasal allergy in childhood, which consists of a depression and flattening on each side of the nose probably caused by inadequate development of the ethmoid cells and antrums. This deformity gives rise to a characteristic appearance which can be easily recognized. The condition is characteristic of perennial rather than of seasonal cases. When it is observed in a seasonal case, one should look for perennial reaction in mild grade. If the cause of allergy is removed, the deformity of the face often becomes less marked as growth and development proceed. If the deformity persists during the growing period into adult life, it is almost certain to be fixed and permanent. The deformity does not resemble the deformity caused by adenoids or breathing through the mouth, unless complicated by one or both of these conditions. The condition is serious enough to warrant an effort to discover and remove the cause of perennial reactions in children, even though the discomfort caused by it is slight.

Electrosurgical Extirpation of Tonsils.—Silvers presents a clinical study of the various methods employed, with their end-results and reports ten cases. The advantages of electrosurgical methods are: (1) complete control of the operative procedure from start to finish; (2) accomplishment of the entire

process of tonsillar extirpation in any desired number of treatments; (3) complete absence of shock and pain under superficial butyn spray (2 per cent); (4) no hemorrhage; negligible bleeding if patient has hemophilia; (5) sterilization of the tonsils in situ prior to removal; (6) no incapacitation; (7) no interference with deglutition; (8) avoidance of general or infiltration anesthesia; (9) no untoward reactions or complications (Silvers has observed none in six years' experience with this method), and (10) usually marked gain in weight. The disadvantages of the electrosurgical technic are: (1) the time required for safely controlled extirpation, and (2) the time and effort required by the operator to master the proper technic.

Archives of Pathology, Chicago

10: 499-648 (Oct.) 1930

*Addison's Disease with Selective Destruction of Suprarenal Cortex. H. G. Wells, Chicago.—p. 499.
Certain So-Called Sarcomas of Thyroid. L. W. Smith, New York.—p. 524.
Lesions in Experimental Amebic Dysentery. D. L. Martin, Tacoma, Wash.—p. 531.
Cavernous Hemangiectasia Occurring Within Nodular Goiter. G. M. Curtis and P. A. Delaney, Chicago.—p. 580.
Method of Producing Chronic Focal Infections. V. H. Moon and F. W. Konzelmann, Philadelphia.—p. 587.
Yellow Fever. L. Buchbinder, New York.—p. 589.

Addison's Disease with Selective Destruction of Suprarenal Cortex.—The six cases reported by Wells evidently represent examples of clinically typical Addison's disease, diagnosed as such before death, associated only with marked selective loss of suprarenal tissue, especially of the cortex, and independent of tuberculosis or other known agency. In the first case, the process seemed to be somewhat more recent than in the others, and indicated that the essential underlying event in all these cases was a selective necrosis of the cells of the suprarenal cortex, with much less visible injury to the elements of the medulla. All the other changes seen in these suprarenals seemed to be secondary to such a selective necrosis of the cortical epithelium and consisted of inadequate attempts at regeneration of the cortex by proliferation and hypertrophy of the few cortical cells left with sufficient vitality to make these regenerative efforts. There was also a variable amount of loss of medullary tissue, but it was never so marked as that of cortex. It is impossible to tell whether this partial loss of medullary tissue was accomplished in the same way as the cortical damage or whether it may not have been the result of the extensive lymphoid infiltration that has followed the destruction of the cortex. There was suprisingly little formation of fibrous tissue in these suprarenals, which supports the other evidence that the primary change was not an inflammatory process. Another definite negative observation was that of the absence of any injury or occlusion in the suprarenal blood vessels. The resemblance to the changes seen in "acute yellow atrophy" of the liver was striking and suggests a similarity in etiology.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

11: 583-640 (Nov.) 1930

Physical Therapy in Orthopedic Practice. D. H. Levinthal, Chicago.—p. 583.
Heat Treatment of Acute Gonorrhea in Female. M. N. Hyams, New York.—p. 588.
Importance of Biomicroscopy in Ophthalmologic Diagnosis. R. Castroviejo, Chicago.—p. 595.
Electrosurgical Destruction of Recurrent Lymphoid Tissue After Tonsillectomy. A. R. Hollender, Chicago.—p. 600.
Physical Therapy in Eye, Ear, Nose and Throat Practice. I. O. Denman, Toledo, Ohio.—p. 602.
Diathermy Apparatus: Suggestion on How Best to Use It. H. G. Fischer, Chicago.—p. 604.
New Pelvic Diathermy Electrode. M. A. Roblee, St. Louis.—p. 607.

Arkansas Medical Society Journal, Little Rock

27: 109-135 (Nov.) 1930

More Recent Therapeutic Measures Employed in Treatment of Tuberculosis. L. J. Moorman, Oklahoma City.—p. 109.
Progress in Ophthalmology. R. J. Calcote, Little Rock.—p. 113.
Present Knowledge of Pellagra. H. S. Thatcher, Little Rock.—p. 117.

Association American M. Colleges Bulletin, Chicago

5: 323-388 (Nov.) 1930

Medical Education in Norway. J. L. Conel, Boston.—p. 327.
Report on Visit to Meeting of General Medical Council, London, May 26 to June 1, 1930. J. S. Rodman.—p. 346.
System in Presentation of Subject Matter. G. B. Hassin, Chicago.—p. 357.

Canadian Medical Association Journal, Toronto

23: 621-746 (Nov.) 1930

Primary Tumor in Breast Carcinoma. L. Cheatle, London.—p. 621.
Plastic Surgery. J. E. Sheehan, New York.—p. 527.
Clinical Use of Certain Placental Extracts. A. D. Campbell and J. B. Collip, Montreal.—p. 633.
*Granuloma Inguinale: Presence in Canada. F. S. Patch, Montreal and C. L. Blew, Great Lakes, Ill.—p. 637.
Conservatism in Treatment of Infective Bone Lesions of Fingers. L. H. McKim, Montreal.—p. 642.
*Pregnancy Complicating Hyperthyroidism and Following Thyroidectomy. G. S. Fahrni, Winnipeg.—p. 645.
*Respiratory Complications Following Surgical Operations. D. C. Aikenhead, Winnipeg.—p. 647.
Treatment of Congenital Dislocation of Hip. H. P. H. Galloway, Winnipeg.—p. 650.
*Syphilis of Aorta and Heart. S. S. Riven, Ann Arbor, Mich., and J. Feigenbaum, Montreal.—p. 656.
Thymus. A. S. Kirkland, Saint John, N. B.—p. 661.
*Results of Use of Acriflavine Hydrochloride in Treatment of Undulant Fever. D. S. Thurber, Tlahualilo, Mexico.—p. 665.
Observations Regarding Penetrating and Perforating Ophthalmic Injuries. F. R. Bennetto, Hamilton.—p. 668.
Preliminary Medication in Children. W. E. Martin, Toronto.—p. 672.
Mixtures to Depress Cough. V. E. Henderson, Toronto.—p. 673.
Solitary Diverticulitis of Cecum. A. Stewart, Montreal.—p. 675.
Persistence of Vitelline Duct in Child One Year Old: Case. F. L. Eid, Macklin, Sask.—p. 676.
Undulant Fever in Manitoba: Case. C. M. McIntyre, Selkirk.—p. 677.

Granuloma Inguinale.—Four cases of granuloma inguinale observed in Montreal are reported by Patch and Blew. In three, the disease was contracted in the tropics. The fourth seems to have originated in Canada. In all four there was a preliminary confusion with syphilis. Donovan bodies were found in two of the cases. After chronic courses, all yielded to treatment with antimony.

Pregnancy Complicating Hyperthyroidism and Following Thyroidectomy.—When pregnancy and hyperthyroidism exist at the same time, Fahrni considers that if the patient is less than five months pregnant a thyroidectomy is the preferable procedure. He does not think that the risk to the patient is much increased by pregnancy, and there seems to be little danger of miscarriage. He has yet to meet with a miscarriage or abortion under these circumstances. In his opinion the interruption of pregnancy at three to five months is much more dangerous than a properly conducted thyroidectomy. After the operation, the pregnant woman is in such physical condition as to be able to go through to confinement in a comparatively normal manner. Her condition a short time after operation contrasts favorably with the highly nervous toxic state often seen before operation, and without operation there is no reason to suppose that this condition will improve much as pregnancy advances. Indeed, it may become aggravated, as he had found in a number of women. In women from six to nine months pregnant he favors conservative treatment rather than thyroidectomy. After confinement the patient may wisely come to operation but not too soon after. In considering the advice to give women who have recently had a thyroidectomy, Fahrni favors advising them against pregnancy for at least two years; but, should they become pregnant in the interval, he thinks there is as a rule no justification for advising interruption of pregnancy. He calls attention to the absence of congenital deformities in these babies, which is not in full agreement with the opinion expressed by others.

Respiratory Complications Following Surgical Operations.—The series reported by Aikenhead consists of 33,066 operations; 3,130 were conducted under general anesthesia; the remainder, 2,765, were under some form of local anesthesia. According to the hospital records there were 55 respiratory complications, with 23 deaths. Of the 55 respiratory complications, 13 were of a minor nature—7 infarcts and 6 pleurisies; the remaining 42 were pneumonic processes. Of the 42 major complications, 9 occurred after emergency operations. Sixteen patients had marked elevation of pulse, temperature and respiration at the time of operation; 9 were over 60 years of age. Twenty-three operations, or more than half, were on the gastrointestinal tract, including herniotomies. Another interesting point is the gravity of the sepsis at the time of operation. Twenty-three of the 42 patients manifesting major complications died. At the time of operation, 19 of these 42 had gross sepsis. Of these 19 patients with sepsis, 14 died, or 73 per cent.

Twenty patients out of the 55 originally mentioned were first-class operative risks, with one death. Of the 35 substandard patients, 22 died. In 1929, of 1,772 abdominal operations six were followed by respiratory complications, and there were 2 deaths. Both of the patients who died were over 70 years of age and had undergone emergency operations. The incidence according to sex was approximately equal in this series. A theory to account for lung infection is advanced. The splinting of the abdominal muscles due to pain in the wound, and tight binders, cause more or less circulatory stasis in the bases of the lungs. To this area of stasis infection tracks up by way of the lymphatics through the diaphragm.

Syphilis of Aorta and Heart.—Seventy-four cases of cardiovascular syphilis form the basis of this report by Riven and Feigenbaum. The ratio between males and females was 0.4 to 1. Sixty-four of the patients were white and ten were colored. The average age of all patients was 50 years, with extremes between 32 and 74 years. About two thirds of the cases occurred between 40 and 55 years. The average interval between the primary syphilitic infection and the onset of symptoms was twenty-four years. The most frequent presenting symptom was dyspnea on exertion. Paroxysmal dyspnea is much more commonly associated with marked cardiac enlargement than with aortic insufficiency. Pain was absent in half of the cases. A changed aortic second sound was found by itself or in association with a diastolic murmur at the base in forty cases. In half the patients the pulse pressure was over 80 mm. of mercury. There are apparently no characteristic blood pressure changes in syphilitic aortitis except when aortic insufficiency is present. In 10 per cent of the cases there was syphilis of the central nervous system. The blood Wassermann reaction was positive in 91 per cent of the cases.

Acriflavine Hydrochloride in Treatment of Undulant Fever.—Seven cases of undulent fever were treated by Thurber by intravenous injection of acriflavine hydrochloride. In five cases the fever was arrested within one month after starting treatment; in two cases the fever continued but at a lower level. In seven untreated cases the duration of the disease was from nine months to two years, two cases ending in death. The best results were obtained in patients treated during the earlier weeks of the disease. If given after the development of arthritis, acriflavine seemed to have little or no effect on this condition. No chronic arthritis developed in the patients in the early stages of the disease. The injections must be given slowly to avoid reactions. Following the injections there occurs a decline, a rise and a final decline in the fever. No severe reactions or harmful effects were seen. Thurber believes that by the use of acriflavine intravenously the course of undulant fever can be materially shortened and the development of an incapacitating arthritis prevented.

Delaware State Medical Journal, Wilmington

2: 185-210 (Nov.) 1930

Etiology. W. G. Morgan, Washington, D. C.—p. 185.

Georgia Medical Association Journal, Atlanta

19: 457-502 (Nov.) 1930

Vasomotor Rhinitis. A. G. Fort, Atlanta.—p. 457.
Care of Eye Injuries from Practitioner's Standpoint. W. O. Martin, Jr., Atlanta.—p. 460.
Keratosis, Epithelioma or Skin Cancer. J. G. Dean, Dawson.—p. 462.
Spinal Anesthesia. R. M. Harbin, Jr., Rome.—p. 467.
Laws Governing the Healing Art in Georgia. J. O. Elrod, Forsyth. —p. 472.
Prenatal Care. J. A. Hunnicutt, Jr., Athens.—p. 479.
Meningococcus Endocarditis. E. A. Bancker, Jr., Atlanta.—p. 480.

Illinois Medical Journal, Oak Park

58: 313-392 (Nov.) 1930

County Medical Society: Duties and Responsibilities in Relation to Public Health. A. Ailes, La Salle.—p. 329.
Care of Wounded of Division in Field. J. J. McKinley, Chicago.—p. 333.
History of Roentgenology. I. S. Trostler, Chicago.—p. 334.
Impressions from Practice of Medicine. L. W. Marquardt, Elmhurst. —p. 338.
Through Woman's Auxiliary, Woman's Clubs Can Become Mighty Factors for Distribution of Scientific Information and for Withholding of Garbled, Inaccurate and Misleading Doctrines. C. B. Reed, Chicago.—p. 341.
Legislative Obstacles in Obtaining Adequate Medical Laws. J. R. Neal, Springfield.—p. 344.
Nursing Problem. E. H. Ochsner, Chicago.—p. 348.
Blood Transfusion: Indications and Methods. H. P. Miller, Rock Island. —p. 357.
Intestinal Obstruction Due to Gallstone in Jejunum. W. S. Siewerth, Chicago.—p. 360.
Relation of Animal Diseases to Public Health. R. Graham, Urbana. —p. 362.
Ringworm of Scalp in Children Treated with Thallium Acetate. W. A. Rosenberg, Chicago.—p. 366.
Phrenico-Exeresis in Treatment of Pulmonary Tuberculosis. D. O. N. Lindberg, Decatur.—p. 368.
Acute Maxillary Sinusitis with Meningismus: Case. S. M. Morwitz, Chicago.—p. 371.
Mirrors of Paranasal Sinuses. J. A. Cavanaugh, Chicago.—p. 372.
Common Pyogenic Skin Infections and Biologic Treatment. M. L. Blatt, S. J. Hoffman and R. D. Herrold, Chicago.—p. 374.
Important Factors in Diagnosis of Foreign Bodies in Air Passages. C. D. Sneller, Peoria.—p. 375.
Pathologic Cervix and Treatment. B. H. Orndoff, Chicago.—p. 380.
Aspects of Ectopic Pregnancy. A. J. Lennon, Joliet.—p. 384.

Indiana State Medical Assn. Journal, Fort Wayne

23: 517-564 (Nov.) 1930

Surgical Procedures for Lesions of Colon. F. W. Rankin, Rochester, Minn.—p. 517.
Compensable Hernia. H. W. Garton, Fort Wayne.—p. 521.
Diagnosis and Treatment of Nontuberculous Suppurative Lung Lesions. J. H. Stygall, Indianapolis.—p. 526.
Combined Pernicious Anemia and Diabetes Mellitus: Case. K. C. Smithburn, W. S. Fisher and L. G. Zerfas, Indianapolis.—p. 528.
Apparatus and Technic for Varicose Vein Injection. A. K. Harcourt, Indianapolis.—p. 530.
Surgery of Closed Pupil. A. E. Bulson, Fort Wayne.—p. 531.

Iowa State Medical Society Journal, Des Moines

20: 495-538 (Nov.) 1930

Primary Pernicious Anemia. O. H. P. Pepper, Philadelphia.—p. 495.
Diagnosis and Treatment of Myxedema. H. A. Collins, Des Moines. —p. 502.
Problems in Control of Undulant Fever. C. F. Jordan, Iowa City.— p. 507.
Iowa's Permissive County Unit Health Law. D. C. Steelsmith, Des Moines.—p. 510.

Journal of Infectious Diseases, Chicago

47: 367-442 (Nov.) 1930

Comparison of Factors Influencing Agglutination Test for Brucella Abortus. B. S. Henry and J. Traum, Berkeley, Calif.—p. 367.
*Boric Acid for Preservation of Milk Naturally Infected with Brucella Abortus. J. Traum and B. S. Henry, Berkeley, Calif.—p. 380.
Growth and Toxin Production of Corynebacterium Diphtheriae in Synthetic Mediums. M. E. Maver, Chicago.—p. 384.
Therapy of Experimental Tetanus Infection. G. E. Coleman, San Francisco.—p. 399.
Hexylresorcinol in Experimental Tetanus. G. E. Coleman, San Francisco.—p. 410.
New Stain for Rickettsia Bodies. M. R. Castaneda, Boston.—p. 416.
Experimental Rabies in White Mice and Attempted Chemotherapy. A. Hoyt and C. W. Jungeblut, New York.—p. 418.
*Identification of Streptothrix Isolated from Human Being Infected with It. G. Mehrten and R. S. Muckenfuss, St. Louis.—p. 425.
Serologic Studies on Proteins Found in Casein. D. C. Carpenter and G. J. Hucker, Geneva, N. Y.—p. 435.

Boric Acid for Preservation of Milk Infected with Brucella Abortus.—Traum and Henry found that boric acid in 1 per cent concentration is a convenient, efficient and safe preservative for milk that is to be injected into guinea-pigs to determine the presence or absence of *Brucella abortus*.

Identification of Streptothrix Isolated from Human Being.—The organism described by Mehrten and Muckenfuss showed true branching, and no granules were present in the diseased tissues; so it was classified as *Streptothrix*. A man, aged 32, was first seen in September, 1928, with signs of nephritis, hypertension and edema, and a purpuric rash. Still later he showed multiple bone lesions. On his last admission in May, 1929, he presented pulmonary symptoms and had a cough, brownish expectoration and pain referred to the right side of the chest. At this time, a fluctuating mass appeared over the tenth rib posteriorly, and *Streptothrix* was first demonstrated in pus aspirated from this swelling. Before the patient's death in June, 1929, his spine had collapsed and several superficial abscesses had appeared. When the necropsy was performed, *Streptothrix* was found in many lesions in the internal organs.

Journal of Lab. & Clinical Medicine, St. Louis

16: 107-224 (Nov.) 1930

*Thrombosis and Embolism. S. R. Rosenthal, Chicago.—p. 107.
Endocrine Correlations. R. C. Moehlig, Detroit.—p. 118.
*Systemic Blastomycosis. R. D'Aunoy and J. L. Beven, New Orleans.—p. 124.
Rôle of Buffers in Chemotherapy. F. R. Greenbaum and P. A. Kober, Chicago.—p. 131.
Postinfluenzal Sinus-Nodal Block. A. E. Parsonnet, Newark, N. J.—p. 136.
*Alimentary Tract of Man: VII. Gastric Responses to Water and Lactic Acid. W. Kuenzel and T. W. Todd, Cleveland.—p. 141.
Phosphorus Metabolism. G. E. Youngburg and M. V. Youngburg, Buffalo, N. Y.—p. 158.
Heated Blood and Blood Derivatives for Cultivation of Hemoglobinophilic Organisms. R. S. Spray, Morgantown, W. Va.—p. 166.
Efficiency of Blood Cultures. R. R. Kracke and H. E. Teasley, Emory University, Ga.—p. 169.
Determination of Nonprotein Nitrogen in One-Tenth of Cubic Centimeter of Blood. A. K. Anderson and S. F. Howell, State College, Pa.—p. 183.
Microscopic Slide Precipitation Tests for Diagnosis and Exclusion of Syphilis. B. S. Kline, Cleveland.—p. 186.
Comparison of Wassermann and Kahn Tests by Means of Quantitative Method. S. C. Schwartz, Washington, D. C.—p. 197.
Improved Anaerobic Culture Dish. R. S. Spray, Morgantown, W. Va.—p. 203.

Thrombosis and Embolism.—The incidence of thrombi and emboli in 1,000 postmortem examinations is discussed by Rosenthal, and its relation to age, sex, color, clinics, heart disease, infectious and suppurative diseases, operative procedures, puerperium and therapy is elaborated on. The mechanism of the formation of thrombi and emboli as brought out in the literature and this statistical report is dependent on a colloidal, chemical or physical alteration of the blood, in association with, in the order of their importance, heart and vessel changes and infectious processes.

Systemic Blastomycosis.—The cases of systemic blastomycosis occurring at the Charity Hospital of New Orleans from 1906 to 1929 are recorded by D'Aunoy and Beven with detailed observations of the pathology in a typical case. Similarity of the gross and microscopic lesions in this condition with those present in tuberculous infections is again emphasized. This similarity necessitates demonstration of the causal agent before positive differential diagnosis can be made. Lesions in the lungs comparable to Miller's types I, II and III of tuberculous bronchopneumonia were encountered.

Gastric Responses to Water and Lactic Acid.—A series of twenty-eight young, healthy, stabilized and trained adult male stomachs was used by Kuenzel and Todd as a type series for the study of gastric behavior after administration of a 5-ounce water or lactic acid meal. Water is found to modify amplitude but not range, frequency, speed or forcefulness of gastric waves which, except in amplitude, remain of neutral type. The water modification has commenced within two minutes and is lost again in less than fifteen. Patency of the pylorus neutralizes large gastric secretion, keeps the size of the shadow small, induces "cogwheel" rugous indentations on the greater curvature and sucks gas from the magenblase into the gastric tube (ballooning). Water and milk modify the neutral pattern in the opposite manner. The relation of the lactic pattern to that of water is, in general, the relation of the buttermilk pattern to that of milk. The gastric waves are reduced in speed and frequency and increased in amplitude and force. There is a definite break with the neutral pattern and a slight pause before the substitution of the lactic response. The pylorus is less frequently open, the gastric shadow is greater, "cogwheel" and "ballooning" are less marked, and the entire behavior pattern is erratic in character.

Journal of Nervous & Mental Disease, New York

72: 489-616 (Nov.) 1930

Movements in Optic Images and Optic Imagination of Movements. L. Kanner and P. Schilder, Baltimore.—p. 489.
Chronic Lethargic Encephalitis in Paraguayan Chaco: Case. J. A. Kerr and J. E. Ruddle, New York.—p. 518.
Tumors of Brain Stem: Five Cases with Autopsy Findings. S. Brock and W. Needles, New York.—p. 521.
Amelioration of Schizophrenia Following Dysentery. K. A. Menninger, Topeka, Mo., and P. E. Kubitschek, St. Louis.—p. 535.
*Genuine Epilepsy. D. M. Olkon, Chicago.—p. 538.

Genuine Epilepsy.—From the data presented by Olkon, he concludes that "genuine epilepsy" has its probable etiologic substrate in capillary hemorrhages occurring at birth, which in turn give rise to the development of the metabolic imbalance and, when severe enough, cause the convulsion.

Journal of Pharmacol. & Exper. Therap., Baltimore

40: 235-372 (Nov.) 1930

Investigation into Distribution of Lead in Organism on Basis of Photographic (Radiochemical) Method. S. Lomholt, Copenhagen.—p. 235.
Depressor Substance in Brain Tissue. R. H. Major and C. J. Weber, Kansas City, Kan.—p. 247.
Electrocardiogram of Nonanesthetized Dogs as Modified by Intravenous Injection of Pitressin, Atropine Sulphate and Vagus Section. C. M. Gruber and W. B. Kountz, St. Louis.—p. 253.
Adsorption and Narcotic Action. H. H. King, J. L. Hall, A. C. Andrews and H. L. Cole, Manhattan, Kan.—p. 275.
Effect of Morphine on Respiratory Center. A. H. Maloney and A. L. Tatum, Madison.—p. 291.
Chloroform Content in Various Tissues During Anesthesia and Relationship to Theories of Narcosis. J. L. McCollum, Toronto.—p. 305.
Quantitative Assay for Testicular Hormone by Comb Growth Reaction. T. F. Gallagher and F. C. Koch, Chicago.—p. 327.
Threshold Relationships of Testis Hormone Indicators in Mammals; Rat Unit. C. R. Moore and T. F. Gallagher, Chicago.—p. 341.
*Toxic Effects of Irradiated Ergosterol. J. C. Hoyle, Cambridge.—p. 351.

Toxic Effects of Viosterol.—Hoyle discusses experiments made to investigate the effects of overirradiated ergosterol and also the protective action of a natural diet and to determine whether a low calcium and phosphorus synthetic diet has a similar protective action. He states that the toxic action of alcohol irradiated ergosterol is due to (*a*), an unknown toxic substance; (*b*), vitamin D. Overirradiation destroys first the vitamin and later the toxic substance. The toxic substance is best formed by irradiating ergosterol in solustions such as alcohol. It is not formed except with difficulty in ergosterol irradiated in oil. The arteriosclerotic effects are due to a poisonous action on the muscle wall and usually later deposit of calcium. Vitamin D in excess doses facilitates the absorption of calcium and allows urinary calculi composed of calcium phosphate to form; it also retards growth. A bread and milk diet protects animals fed with excess of alcohol irradiated ergosterol against arteriosclerosis. There is no protection against excess of vitamin D. Neither bread nor milk alone gives protection against excess of alcohol-irradiated ergosterol. The employment of a synthetic diet modified to resemble bread and milk in composition and also one poor in calcium and phosphorus has no protective effect.

Kansas Medical Society Journal, Topeka

31: 391-426 (Nov.) 1930

Mental Disturbances Associated with Childbirth. W. C. Menninger, Topeka.—p. 391.
Hemorrhoid Operation Under Local Anesthetic. C. C. Tucker, Wichita.—p. 395.
Hypertension. N. W. Robison, Bison.—p. 401.
Avertin as Rectal Anesthetic as Used in Bier's Clinic, Berlin. A. C. Eitzen, Hillsboro.—p. 403.
Carbuncle of Kidney: Case. N. F. Ockerblad, Kansas City.—p. 406.

Kentucky Medical Journal, Bowling Green

28: 517-590 (Nov.) 1930

Tonsillectomy in Adult. C. T. Wolfe, Louisville.—p. 582.

Laryngoscope, St. Louis

40: 787-866 (Nov.) 1930

Considerations and Suggestions in Handling of Lateral Sinus Thrombosis. A. T. Wanamaker, Seattle.—p. 787.
Method for Repair of Persistent Postauricular Openings. R. Almour, New York.—p. 799.
Auditory Nerve Deafness. A. Schattner, New York.—p. 802.
Fatal Idiopathic Pharyngeal Hemorrhage: Case. E. R. Roberts, Bridgeport, Conn.—p. 807.
How Shall We Evaluate Various Manifestations of Acute Mastoiditis? B. L. Bryant, Cincinnati.—p. 809.
Analysis of 100 Consecutive Nasal Sinus Cases Treated Conservatively. E. R. Lewis, Los Angeles.—p. 822.
One Method of Closing Ethmoid Fistula. H. M. Cunningham, Vancouver, B. C.—p. 830.
Present Status of Lothrop-Skillern Radical Operation on Frontal Sinus: Technic. H. B. Goodspeed, Philadelphia.—p. 832.
Satisfactory Water Suction. P. Viole, Los Angeles.—p. 837.
Carcinoma and Tuberculosis of Larynx: Cases and Autopsy Findings. C. K. Shofstall, Kansas City, Mo.—p. 839.
Explanatory Remarks Regarding Statements Made Pertaining to Discussion of Iodine Powder (Sulzberger). M. D. Lederman, New York.—p. 844.

Missouri State Medical Assn. Journal, St. Louis

27: 515-564 (Nov.) 1930

Acute and Chronic Bronchitis in Infancy and Childhood. C. B. Summers, Kansas City.—p. 515.
Chronic Empyema in Children. J. G. Montgomery, Kansas City.—p. 517.
Pulmonary and Tracheobronchial Gland Tuberculosis in Childhood. T. C. Hempelmann, St. Louis.—p. 519.
Primary Carcinoma of Fallopian Tube: Case. W. J. Gallagher, St. Louis. —p. 522.
Erysipelas as Complication of Early Surgical Interference in Mastoiditis. O. J. Dixon, Kansas City.—p. 530.
Endocrinology: Application in General Practice. D. L. Sexton, St. Louis. —p. 533.
Treatment of Carcinoma of Tongue. E. Fischel, St. Louis.—p. 541.
Carcinoma of Thyroid with Metastasis to Skull. H. Wilkins, St. Louis. —p. 547.

New England Journal of Medicine, Boston

203: 909-958 (Nov. 6) 1930

Total Gastrectomy for Cancer of Stomach: Case. H. M. Clute and R. L. Mason, Boston.—p. 909.
Fifty Years of Boston Society of Psychiatry and Neurology. H. R. Viets, Boston.—p. 914.
Present Status of Peptic Ulcer. S. M. Jordan, Boston.—p. 917.
Pay Clinics. F. E. Wing, Boston.—p. 920.
Pathologic Changes of Endometrium. J. F. Gile, Hanover, N. H.—p. 928.
Arteriosclerosis of Coronary Arteries: Autopsies. O. H. Hubbard, Keene, N. H.—p. 932.
County Medical Society. M. L. Harris, Chicago.—p. 937.

203: 959-1010 (Nov. 13) 1930

Cancer of Prostate Without Urinary Symptoms. J. D. Barney, Boston. —p. 959.
Loss of Time Before Tuberculous Patient is Admitted to Sanatorium. L. R. Williams and A. M. Hill, New York.—p. 961.
Co-Occurrence of Enlarged Thymus and Congenital Hernia. E. A. Edwards, Boston.—p. 969.
Practice of Medicine in Industry. H. W. Stevens, Boston.—p. 972.

New Jersey Medical Society Journal, Orange

27: 825-922 (Nov.) 1930

Second Thoughts on René Descartes. H. M. Hall, Wheeling, W. Va. —p. 825.
Quo Vadis—Or Trends in Work of Medical Profession. L. B. McBrayer, Southern Pines, N. C.—p. 839.
Increasing Efficiency, Reducing Cost and Improving Professional Status. H. O. Reik, Atlantic City.—p. 845.
Nephritis and Nephrosis: Preventive Treatment. D. Riesman, Philadelphia.—p. 852.
Rheumatic Fever in Children. S. Nichols, Asbury Park.—p. 858.
Etiology of Glaucoma: Colloidal Chemistry. H. L. Harley, Atlantic City. —p. 865.
Diagnosis of Glaucoma. W. D. Olmstead, Atlantic City.—p. 871.
Nonsurgical Treatment of Glaucoma. J. F. Chattin, Newark.—p. 874.
Choice of Operation in Glaucoma. E. S. Thomson, New York.—p. 876.
Visit to Clinic of Dr. Lorenz Böhler. H. L. Wenger, Paterson.—p. 882.

New York State Journal of Medicine, New York

30: 1333-1396 (Nov. 15) 1930

Further Advancement in Gynecologic Diathermy. T. H. Cherry, New York.—p. 1333.
Medical Diathermy. R. Kovacs, New York.—p. 1336.
Return of General Practitioner. H. W. Jones, Utica.—p. 1343.
Treatment of Skin Cancer. J. J. Eller and E. C. Fox, New York.—p. 1344.
Prognosis of Blood Stream Infections in Children. R. H. Dennett and A. W. Allen, New York.—p. 1352.
Ocular Birth Injuries. M. W. Jacobs, St. Louis.—p. 1355.
Discussion on Ocular Birth Injuries. E. M. Blake, New Haven, Conn. —p. 1357.
Epilepsies: Etiology and Symptomatology. W. T. Shanahan, Sonyea.—p. 1359.
Vaso Ligation in Cases of Prostatic Obstruction. G. A. Cashman, New York.—p. 1364.

Northwest Medicine, Seattle

29: 499-554 (Nov.) 1930

Cooperation in Medical Profession. W. J. Johnston, Portland, Ore.—p. 499.
Malignancy of Large Bowel. F. W. Rankin, Rochester, Minn.—p. 500.
Rehabilitation in Surgery of Colon. S. F. Herrmann, Tacoma, Wash. —p. 505.
Intestinal Obstruction. G. E. Burget, Portland, Ore.—p. 507.
Gastrocolic Fistula: Cases. A. Betts, Spokane, Wash.—p. 509.
Diagnosis of Spinal Cord Tumor. D. G. Dickerson, Seattle.—p. 511.
Surgery of Sympathetic Nervous System and Chronic Arthritis. P. G. Flothow, Seattle.—p. 518.
Acute Diffuse Septic Meningitis. J. T. Rooks, Walla Walla, Wash.—p. 522.
Training Child to Eat. C. E. Hunt, Eugene, Ore.—p. 527.

Pennsylvania Medical Journal, Harrisburg

34: 71-152 (Nov.) 1930

*Intraperitoneal Therapy in Treatment of Diseases of Children. C. G. Grulee and H. N. Sanford, Chicago.—p. 71.
Value of Foreign Protein Therapy in Treatment of Ocular Pathologies. C. E. G. Shannon, Philadelphia.—p. 76.
Differential Diagnosis of Chickenpox and Smallpox. J. F. Schamberg, Philadelphia.—p. 84.
Symptomless Extensive Carcinoma in Abdominal Cavity with Fatal Hemorrhage. F. J. Dever, Bethlehem.—p. 86.
Seven Cases of Pernicious Anemia. J. N. Hunsberger, Norristown.—p. 86.
Case of Rabies. H. A. Heise, Uniontown.—p. 87.
Hepatomegaly. W. M. Bortz, Greensburg.—p. 88.
Pericarditis Calculosa. J. L. Lenker, Harrisburg.—p. 89.
Pulmonary Distomiasis. J. A. Stackhouse, Erie.—p. 90.
Acute Pneumococcic Peritonitis with Acute Empyema—Left Metastatic. S. D. Conklin, Sayre.—p. 91.

Intraperitoneal Therapy in Treatment of Diseases of Children.—Grulee and Sanford discuss their experiences with intraperitoneal injections of dextrose into infants and young children suffering from severe dehydrating diarrhea, lobar pneumonia and bronchopneumonia, pyelitis, tonsillitis, intussusception, peritonitis, after operation, and syphilis. The method of administering dextrose solution intraperitoneally is usually by a 100 cc. Luer syringe. Small infants receive a correspondingly smaller amount, the injections ceasing just at the point of distention. Five per cent dextrose solution is the best concentration, as higher concentrations tend to draw the body fluids into the peritoneal cavity. Intraperitoneal injections of dextrose should never be given in larger quantities, at one injection, than 100 cc. As 100 cc., however, is only about half the usual fluid intake of a child at one feeding, the injection, to be effective, must be repeated frequently. The fluid is rapidly absorbed. In this series of cases, one child was given six intraperitoneal injections of 100 cc. of 5 per cent dextrose solution daily for four days. The maximum number of injections in this series was twenty-four, and the average number six. They have also injected blood and various drugs, especially neoarsphenamine, diphtheria antitoxin and iron. Two facts stand out, however, as distinct advantages: The reactions are certainly fewer and slighter than in intravenous injections, and the simplicity of the procedure is such as to make it applicable for almost universal use.

Physical Therapeutics, New York

48: 529-576 (Nov.) 1930

Modern Treatment of Accessible Growths. W. D. McFee, Boston.—p. 529.
Pruritus Ani et Vulvae. F. H. Humphris, London, England.—p. 535.
Special Fields in Physical Therapy. W. B. Snow, New York.—p. 540.
Cancer and Physicochemical Agents. F. Foveau de Courmelles, Paris, France.—p. 550.
Hepatocardiac Syndrome. W. Martin, Atlantic City, N. J.—p. 553.
Gastro-Intestinal Stasis in Psychoses. H. A. Cotton, Trenton, N. J.—p. 560.

Tennessee State Medical Assn. Journal, Nashville

23: 393-432 (Nov.) 1930

Nature of Eczema. W. A. Pusey, Chicago.—p. 393.
Evolution of Urology. C. F. Anderson.—p. 400.
Evolution of Pediatrics. I. A. Abt, Chicago.—p. 407.
Reduction of Fractures Under Local Anesthesia. W. S. Anderson, Memphis.—p. 413.
Causes of Nonunion Following Fracture of Bones E. D. Newell, Chattanooga.—p. 415.

West Virginia Medical Journal, Charleston

26: 641-704 (Nov.) 1930

Ophthalmology and General Practice of Medicine. T. W. Moore, Huntington.—p. 641.
Relation of General Practitioner to Specialist. M. Y. Dabney, Birmingham, Ala.—p. 645.
Surgery in Diabetes Mellitus. J. H. Smith, Richmond, Va.—p. 650.
Diagnosis and Treatment of Thyrogenic Heart Disease. E. R. Arn, Dayton, Ohio.—p. 654.
Correlation of Clinical and Pathologic Concepts of Hyperthyroidism. W. M. Simpson, Dayton, Ohio.—p. 656.
Traumatic Surgery of Genito-Urinary Tract. T. Jud. McBee, Morgantown.—p. 659.
Treatment of Neurosyphilis. W. M. Sheppe, Wheeling.—p. 662.
Osteitis Deformans: Case. L. K. Zimmer, Wheeling.—p. 669.
Double Monstrosity or So-Called Siamese Twins: Case. G. L. Viewig, Wheeling.—p. 672.
Thymoma: Case. H. G. Little and H. M. Hall, Wheeling.—p. 673.
Sarcoma of Uterus: Case. R. K. Buford and J. C. Palmer, Charleston. —p. 675.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 807-848 (Nov. 15) 1930

*Psychology and Psychopathology of Childhood. R. D. Gillespie.—p. 807.
*Results of Treatment in Exophthalmic Goiter. F. R. Fraser.—p. 811.
*After-History of Healed Surgical Tuberculosis. E. D. Telford.—p. 812.
*Radium in Treatment of Menorrhagia and Irregular Uterine Hemorrhage. M. Donaldson.—p. 813.
*After-Effects of Intra-Uterine Radium for Production of Artificial Menopause. M. L. Kreitmayer.—p. 815.
Pneumonoconiosis Due to Flue Dust. W. E. Cooke.—p. 816.
*Technic in Endotracheal Anesthesia. I. W. Magill.—p. 817.
Nose and Throat in Relation to Orbital and Ocular Disease. J. Lewin.—p. 820.
Treatment of Tetanus. J. H. Grove-White.—p. 821.
Parasitic Dermoid Cyst. A. A. Gemmell.—p. 822.
Glandular Fever in Falkland Islands. J. I. Moir.—p. 822.

Psychology and Psychopathology of Childhood.—Gillespie states that there are several principal directions of interest for the student of child psychopathology. These are the psychopathology of childhood for its own sake, the physical signs and symptoms produced by emotional factors and especially prone to occur in children, and the connection of adolescent and adult psychologic morbidity with childhood and its influences. The first and especially the second of these directions are of peculiar interest to the student and teacher of pediatrics; for a numerically important and varied group of physical disturbances of a fairly distinctive kind results from emotional and temperamental influences. The third is one that interests the professed psychiatrist more; but the pediatrician who explores it can make valuable contributions in a largely unworked field of preventive medicine. The psychiatrist, who so often sees only the end-results, envies the pediatrician his opportunities of seeing the beginnings, of watching personalities in the making, and of guiding them toward healthy, happy achievement.

Results of Treatment in Exophthalmic Goiter.—Analysis of seventy-six cases has convinced Fraser that, of patients whose condition is severe enough to require admission to a hospital, surgical treatment is indicated in the present state of knowledge in those with secondary exophthalmic goiter. It is indicated, also, in those with primary exophthalmic goiter who do not improve rapidly or who continue to relapse and become chronically ill in spite of satisfactory management, or who for financial or other reasons cannot submit to adequate observation and treatment. In a number of the younger patients with primary exophthalmic goiter recovery takes place without surgical treatment, but observation and treatment extending over years may be necessary.

After-History of Healed Surgical Tuberculosis.—The respective merits of the conservative and operative methods of treatment of these cases is discussed by Telford. He has treated this type of case during twenty-six years in one institution by conservative methods, involving, in addition to the usual resources of general treatment, a somewhat rigid fixation by plaster or appliance. The investigation made by him concerns a total of 170 cases of children who have been under his care for tuberculous disease of the larger joints. These patients comprise sixty-seven suffering from disease of the spine, seventy-one with disease of the hip-joint, and thirty-two in whom the lesion was in the knee joint. All these patients were discharged between the years 1906 and 1924 with the observation "apparently cured." None of the patients examined have been discharged from the institution for a shorter period than six years, and the length of time that has elapsed since their apparent cure ranges from six to no less than twenty-four years. Of the 170 patients, the present condition of 129 is exactly known. The main fact which emerges is that, out of these 129 patients, no fewer than 110 remain perfectly well. The average residence in the institution of these 170 patients was three years and two months.

Radium in Treatment of Menorrhagia and Irregular Uterine Hemorrhage.—Donaldson asserts that in cases in which the patient is over 40 years of age and suffering from irregular hemorrhage without a gross pathologic lesion, the production of an artificial menopause by means of radium is the treatment of choice if drugs fail. The optimum dose of radium seems to be 50 mg. of the element screened with not less than 0.5 mm. of platinum and kept in the uterine cavity for forty-eight hours. When the patient is over 40 years of age and suffering from pure menorrhagia without any gross pathologic lesion, roentgen rays should be considered as an alternative method of producing an artificial menopause. In young women in whom other treatment has failed to cure the symptom of uterine hemorrhage or menorrhagia, radium has been used successfully to cure this symptom, but there is a risk of permanent amenorrhea and severe menopausal symptoms, which perhaps makes subtotal hysterectomy preferable in the majority of cases.

After-Effects of Intra-Uterine Radium for Production of Artificial Menopause.—Kreitmayer analyzes the results of radium treatment of ninety-seven patients who could be traced from the point of view of the production of amenorrhea and in whom the treatment has been satisfactory. The fact that seventy-seven of the patients complain of flushes, fifty-two of sweats, fifty-nine of depression, fifty-four of headaches, and fifty-four of nerves, suggests that menopausal symptoms are prominent sequels of the treatment. In spite of these menopausal symptoms, however, seventy-six of the patients said that they are better, ten that they feel just the same, and only three that they are worse. Although a large proportion complain of pain, one cannot say how much of this is due to the treatment, or even if the pain was present or not before the treatment.

Technic in Endotracheal Anesthesia.—Magill states that the fundamental principle of endotracheal anesthesia is the provision by intubation of an airway that is proof against obstruction. High-pressure insufflation is usually unnecessary. Deep anesthesia is not essential for intubation. Dexterity in intubation minimizes the disadvantages. Owing to the greater ease with which intubation can be performed through the nose, this route should always be chosen when possible.

Edinburgh Medical Journal

37: 609-664 (Nov.) 1930

*Classification of Tumors. W. F. Harvey and T. D. Hamilton.—p. 609.
Secondary Carcinoma of Lung with Inconspicuous Primary in Gall-bladder. W. E. Foggie and G. R. Tudhope.—p. 632.
Thanatophoric Fish. D. M. Greig.—p. 638.
Purpura Annularis Telangiectodes: Case. R. Curle and S. W. Smith.—p. 641.
Adult Ringworm of Scalp. R. Aitken.—p. 645.

Classification of Tumors.—Harvey and Hamilton advocate that division of tumors by classification, after the manner adopted in biology, should be into families, genera, species and varieties. Nomenclature should follow as closely as possible the principles of classification even at the expense of abandonment of old names with their attached priority claims. The nomenclature should be strictly binominal and consist of a genus-species designation. On this scheme the characterization of a tumor will only to a limited extent be contained in the genus-species name, but the tendency to add to the name and make it polynominal should be resisted. The remaining characterization is thus relegated to descriptive legend or text. Classification and nomenclature should be provisional or changeable according to individual views but should not transgress the principles which have been enunciated and which are only logical. The idea to be aimed at is a classification and nomenclature with the sanction of authority and having general acceptance, which would then require the same sanction for its alteration. They publish their own scheme of classification and nomenclature of tumors.

Tubercle, London

12: 49-96 (Nov.) 1930

Economics of Tuberculosis Settlements. E. L. Sandiland.—p. 49.
*Morbid Anatomy of Malignant Disease of Mediastinal Glands, Lungs and Pleurae. S. R. Gloyne.—p. 54.
Findings in Five Years' Work on Tuberculosis. J. A. Struthers.—p. 62.

Morbid Anatomy of Malignant Disease of Mediastinal Glands.—Gloyne says that twenty years ago the growths most commonly encountered were those situated in the mediastinal glands; now the type affecting the lung with only secondary, and often slight, extension to the mediastinal glands, has come

much more into the picture. He has compiled 1,073 necropsy records, from 1904 to 1929. As the war years were deemed to be abnormal in so many respects, they have been excluded. In the first period, from 1904 to 1913, 403 necropsies were done. There were sixteen (4 per cent) mediastinal growths and four (1 per cent) pleural and lung growths. During the ten years 1920 to 1929 there were 670 necropsies, with thirty-eight (57 per cent) mediastinal growths and forty-three (6.4 per cent) pleural and lung growths. Excluding the other intrathoracic organs, such as pleura, heart and pericardium, the commonest situations for metastases to occur are, in the order of frequency, osseous system (vertebrae, femur, ribs, sternum, skull, pelvic bones), liver, suprarenals, kidney, spleen, pancreas and brain. No organ is immune from secondary deposits. Of the less common situations for metastases to occur, lesions in the brain and thyroid and multiple deposits in the skin are likely to give rise to confusion and difficulty and may cause the primary site of the disease to be overlooked.

Annales de l'Institut Pasteur, Paris

45: 415-523 (Oct.) 1930

Properties of Methylated Antigen. L. Nègre and A. Boquet.—p. 415.
*Experimental Inoculation of Tuberculous Material into Lymph Nodes. G. Ninni.—p. 433.
Isolation of B C G from Lymph Nodes of Guinea-Pigs Vaccinated Orally. F. Piazecka-Zeyland.—p. 439.
Nervous System in Etiology of Tumors. M. Marullaz.—p. 443.
Experimental Enzootic Encephalomyelitis. S. Nicolau and I. A. Galloway. —p. 457.

Experimental Inoculation of Tuberculous Material into Lymph Nodes.—Ninni injected directly into the lymph nodes of guinea-pigs various materials suspected of containing tubercle bacilli: pleural fluids, cerebrospinal fluids in meningitis, pneumonic exudates, pus from suppurative adenitis, purulent feces of enteritis, and so on. Three guinea-pigs were inoculated with each substance; two were inoculated into the lymph nodes with 0.1 cc. and one subcutaneously with 2 cc. The inoculations of pleural and cerebrospinal fluids were usually followed by the development of tubercle bacilli in the lymph nodes within eight days; the other substances required twelve days. This is a much shorter time, however, than is required with the method of subcutaneous injection. The guinea-pigs were kept alive for some time after the ablation of the inoculated lymph nodes; all those in which tubercle bacilli had been found presented clinical symptoms of tuberculosis. When the substances injected contained other bacteria also, these had no effect on the lymph node and were not evident after eight or twelve days; this is a distinct advantage over the subcutaneous injections, in which the bacilli always produce an abscess at the point of inoculation. The great saving of time, as well as the specificity of the method, resulting from the elimination of the associated bacteria, leads the author to consider inoculation directly into the lymph nodes a valuable method of diagnosis of tuberculosis.

Archives de Médecine des Enfants, Paris

33: 647-710 (Nov.) 1930

*Treatment of Athreptic Nurslings by Thyroid Extract in Subcutaneous Injections. P. Nobécourt, R. Liège and Guérin.—p. 647.
*Iron Content of Blood in Children in Normal and Pathologic Conditions. G. Halfer.—p. 659.

Treatment of Athreptic Nurslings by Thyroid Extract in Subcutaneous Injections.—Nobécourt et al. describe five cases of athrepsia in which the infants were treated by daily subcutaneous injections of thyroid extract. The usual dose is from 0.05 to 0.1 Gm. of a liquid extract. However, since some patients may not tolerate the extract as well as others, the authors usually begin with a dose of a fourth of an ampule of a solution containing 0.1 Gm. of thyroid extract for each 1 cc. ampule. If digestive or cardiac disturbances or fever result, the treatment is discontinued. Although in some cases of confirmed cachexia or hypotrophy the results of the thyroid extract treatment are negligible, the authors find that it is generally efficacious. The first effect is usually the return of appetite. The digestive troubles are ameliorated, the temperature curve becomes stabilized, and the weight of the child increases. The time required for the ensemble of these results varies with the severity and duration of the athreptic condition. Although other methods of opotherapy are also valuable in combating athrepsia in nurslings, thyroid extract has been especially helpful in certain cases of severe cachexia in which other methods have failed.

Iron Content of Blood of Children.—Using the Funk-Autenrieth colorimetric method of determination, Halfer made a study of the iron content of the blood of thirty normal children of from a few days to 8 years of age. The children were all in a normal hematimetric condition. The blood was taken in the morning before eating. During the first few days of life the proportion of iron in the blood is high, 44.4 mg. per hundred cubic centimeters on the third day and 45.2 mg. on the fifth day. About the end of the second week the quantity begins to diminish. In the second month it again increases, reaching a maximum of 48.8 mg. From the third month until the end of the second year the count oscillates between 20.8 mg. and 37.6 mg. From the age of 2 years to the age of 8, the proportion continues to vary from 20.8 mg. to 40.8 mg. The author then made the same test in ninety-six children with various acute and subacute diseases: tuberculous infections, respiratory diseases, whooping cough, measles, chickenpox, acute anterior poliomyelitis, and other maladies. An effort was made to choose diseases in which the condition of the erythrocytes and the hemoglobin content are not affected. In only a few cases could deviation from the normal be observed in the iron content of the blood as a result of the pathologic condition of the child. The author then examined five children with diseases affecting the hematopoietic system but could see no parallelism between the hematimetric fluctuations and the iron content of the blood.

Presse Médicale, Paris

38: 1393-1416 (Oct. 15) 1930

*Intra-Epidermal Inoculation as Method of Diagnosis of Chancroidal Lesions. P. Ravaut, Rabeau and D. Hesse.—p. 1393.

Intra-Epidermal Inoculation as Method of Diagnosis of Chancroidal Lesions.—Ravaut et al. describe a method of diagnosis of chancroidal lesions by inoculating the fresh exudates of the lesions into the epidermis. Thirty-three patients were included in the experiments, some of whom presented chancroidal lesions of the genitalia or of the anus; others buboes. Since in a few patients both types of lesions were present, the study really included forty-six cases. Tests were made by examination on slides, cuti-inoculations, intra-epidermal inoculations, and intradermal reactions of Dmelcos. The results were considered positive only when papulo-ulcerous lesions with Ducrey's bacilli were produced experimentally. Intra-epidermal inoculation produced positive reactions in eighteen of the cases (40 per cent), which results were far superior to the methods of cuti-inoculation and examination on slides, which gave, respectively, 4 per cent and 20 per cent of positive reactions. The Dmelcos reaction gave a larger proportion of positive results (65 per cent) but there is always a suspicion that the patient has been previously infected by the Ducrey bacillus; moreover, the presence of the organism is the best proof of the nature of a lesion. Of the twenty-five cases in which intra-epidermal inoculation produced doubtful results (i. e. papulo-ulcerous or papular lesions without Ducrey's bacilli), other methods revealed the presence of the bacilli in eight cases. In several of these cases the chancroidal lesions involved were mild. Although the results are not always conclusive, nevertheless the method of intra-epidermal inoculation seems to the authors to deserve an important place among the methods of diagnosis of chancroidal lesions.

38: 1449-1464 (Oct. 25) 1930

*Postoperative Symptoms in Cerebral Surgery. T. de Martel.—p. 1449.
*Pure Febrile Form of Acute Articular Rheumatism. L. Ramond.—p. 1459.

Postoperative Symptoms in Cerebral Surgery.—De Martel shows that practically all postoperative complications of cerebral surgery are due to a ventricular hypertension that acts on the centers of the third and fourth ventricles and causes coma, hyperthermia and respiratory disturbances. These complications are always fatal unless immediate action is taken when the symptoms appear. The hypertension is sometimes due to a recurrence or augmentation of the preoperative hyper-

tension that is always present in cases of cerebral tumor either from a direct blockage of the cerebrospinal fluid by intraventricular tumors or from a secondary blockage caused by tumors developing in other parts of the brain, which produce a pressure cone. Postoperative hypertension may also be produced by the operation itself, which causes an increased secretion of cerebrospinal fluid and likewise causes retention of the fluid in the cerebral cavities by preventing its absorption in the region of the perivascular spaces and the pacchionian bodies, as a result of the accumulation of dead cells and erythrocytes from the degeneration of the tumor tissue and from operative hemorrhages. In combating this hypertension, the author recommends two types of treatment, one directed against the rapidly mounting fever and the other against the hypertension. To reduce the hyperthermia, cold intestinal irrigations and cold packs are excellent. To relieve the hypertension a lumbar puncture should be done, releasing a quantity of bloody cerebrospinal fluid. The puncture should be repeated until the fluid is clear. If in spite of the lumbar punctures the hypertension recurs, a ventricular puncture should be done. In connection with the lumbar and ventricular punctures the patient should be given intravenous injections of a 15 per cent solution of magnesium sulphate, which by osmosis reduces the volume of cerebrospinal fluid and the cerebral edema that sometimes results from the operation. In giving this treatment it is advisable to place the patient in the Trendelenburg position. If low arterial pressure is observed in connection with the fever, injections of epinephrine will be helpful.

Pure Febrile Form of Acute Articular Rheumatism.—Ramond reports the case of a soldier, aged 19, who was seemingly affected with febrile myalgia. However, the fever did not yield to treatment, a marked anemia appeared and the patient grew weaker. Various diagnoses—typhoid, typhobacillosis, meningeal tuberculosis, uremia and acute nephritis—were proposed and rejected because of laboratory tests or clinical developments. The author first saw the patient when he had been in the hospital for several months and was struck by the extreme pallor of his skin. Examination of the heart revealed a loud diastolic murmur below the apex followed by a mitral systolic murmur that extended into the axilla. The anamnesis revealed that the youth had formerly had two attacks of rheumatism and that he had been cured both times by sodium salicylate. Moreover, at several times during this illness he had complained of pain in his knees and feet and had been relieved by the administration of sodium salicylate. The author was convinced that the case was a pure febrile form of acute articular rheumatism because of the anemia, the particular cardiopathy observed, and the albuminuria. The peculiar development of the disease had systematically eliminated other possible explanations. Moreover, the previous attacks of rheumatism together with the recent manifestations of arthralgia were typical of the chronic character of the disease with acute periodic symptoms. Treatment by sodium salicylate, in a daily dose of 8 Gm., was prescribed. The diet was at first lactovegetarian; meat was gradually added. In less than two months the patient left the hospital cured.

Schweizerische medizinische Wochenschrift, Basel

60: 957-980 (Oct. 11) 1930

Recent Developments in Theory of Functions of Afferent Part of Nervous System. K. M. Walthard.—p. 957.
Therapy of Mental Diseases. H. Steck.—p. 962.
*Physiologic-Pathologic Observations During Flight at High Altitudes. W. Baertschi.—p. 965.
Percussion of Pulmonary Apexes. A. Winkler.—p. 971.
Tuberculin Tests in Schools. M. Vontobel.—p. 973.
Rules and Experiences in Operative Treatment of Pendulous Breast. R. Amersbach.—p. 974.

Physiologic Observations During Flight at High Altitudes.—Baertschi gives a detailed report of observations which he made on himself and on pilots during flights at high altitudes. When the ascent to 4,000 meters was rapid, a stage of excitation or euphoria was noticeable. In ordinary airplanes the ascent is usually not rapid enough to bring out the manifestations that characterize this stage. However, the author flew in military airplanes, which ascended rapidly. He compares the stage of euphoria with a slight alcoholic intoxication. As signs of the excitation of the nervous system he noted increased bodily tonicity and mental elation, a desire to be active, absence of inhibitions and great animation. The respiration was accelerated. Before the organism becomes accustomed to the higher altitude, the pulse frequency at 4,000 meters is almost twice that before the take-off. After that, however, it gradually subsides again. Polypnea, deeper respiration, tachycardia and reduced blood pressure may be considered as regulatory mechanisms, which are called into action by oxygen hunger. The author further describes his observations during the stage of apathy. Flying at an altitude of 6,000 meters cannot be endured longer than one hour. During this time the mental activity shows a peculiar inhibition. A report is given which was written during one of these flights. It reveals a physical and mental fatigue, lack of interest in the surroundings, reduced concentration capacity, a dulness of the emotions, decreased will power, somnolence, reduced perception, and disturbances in the power of combination and of association. The author further discusses the influence of the high altitude on vision, and hearing, respiration, pulse, circulation, peripheral nervous system and renal activity. The greatest dangers are the possibility of an acute cardiac weakness and anemia of the brain; the latter may lead to sudden loss of consciousness.

Clinica Ostetrica, Rome

32: 537-600 (Sept.) 1930

*Alkali Reserve in Blood During Gestation. S. Pascali.—p. 537.
Conservative Treatment of Puerperal Inversion of Uterus. A. Martinolli.—p. 555.

Alkali Reserve in Blood During Gestation.—As the result of experiments carried out in forty-five cases in various months of gestation, Pascali reached these conclusions: 1. In the first three months of pregnancy, the alkali reserve is lowered in an evident and constant manner, though not markedly. 2. The normal limits of the alkali reserve are usually maintained between the fourth and eighth months. 3. In the ninth month, the alkali reserve is about normal but tends to fall in the beginning of labor. Pascali thinks that the lowering of the alkali reserve during the first three months is due to the unpreparedness of the organism for this new state—that a certain time is required before the various organs subjected to new and more intense work can adapt themselves to the modified functions imposed by pregnancy.

Pediatria, Naples

38: 1033-1088 (Oct. 1) 1930

*Etiology and Pathogenesis of Erythema Nodosum. P. Fornara.—p. 1033.
Pathogenicity of Strains of Loeffler Bacillus Isolated from Infants with Diphtheria in Last Epidemics. A. Signa.—p. 1047.
Postvaccinal Encephalitis: Two Cases. A. Pinelli.—p. 1058.
Echinococcosis in Right Lung in Child. U. Toppo.—p. 1066.

Etiology and Pathogenesis of Erythema Nodosum.—Fornara reviews the literature on the etiology and pathogenesis of erythema nodosum. He presents two cases of contagion of the disease. The first case was that of two brothers, sons of a tuberculous patient. The sister of the patients presented a similar picture to that of the brothers but no cutaneous lesions appeared. The second case was that of a child who contracted the disease from a neighbor. The author concludes by saying that erythema nodosum is an autochthonous disease. It is contagious in some persons. The cutaneous lesions appear only in tuberculous patients with hyperallergy to tuberculin.

Rivista di Clinica Pediatrica, Florence

28: 745-840 (Sept.) 1930

Behavior of Calcium and Potassium in Blood Serum in Diphtheria. F. Peola and E. Inglessi.—p. 745.
*Pathogenesis of Icterus in the New-Born. G. Pedrinoni.—p. 758.
Postvaccinal Nerve Syndromes. C. Malossi.—p. 776.
Diphtheria Morbidity and Schick Test. E. Merlini.—p. 789.
*Malignant Tumors and Eosinophilia. A. Bardisian.—p. 802.

Pathogenesis of Icterus in the New-Born.—Pedrinoni, after studying the functioning of the liver in children with icterus neonatorum, reaches the conclusion that this type of icterus is due to hemolysis.

Malignant Tumors and Eosinophilia.—Bardisian reports a case of sarcoma of the head (a rare localization) in a child, aged 32 months, which was not easy to diagnose and the biopsy and microscopic examination of which were of interest because

of the unusual presence of many eosinophils. He discusses this manifestation from the prognostic point of view, for some authors regard this feature as a sign of benignity; that is to say, of conservation and also indication for actinic treatment.

Rivista di Patologia e Clin. della Tubercolosi, Bologna

4: 725-828 (Sept. 30) 1930

*Histologic Manifestations in Experimental Pneumothorax. F. Pescatori.—p. 725.
Certain Factors That Influence Pathogenesis of So-Called Pneumothoracic Pleuritis. V. Chini.—p. 740.
Evolutional Cycle of Tubercle Bacillus. M. Scarzella.—p. 745.
Oleothorax. F. Zacco.—p. 748.
Bilateral Simultaneous Therapeutic Pneumothorax. S. Morelli.—p. 757.
Diet of Low Sodium Chloride Content in Pulmonary Tuberculosis. M. Goldstein.—p. 770.
Simultaneous Bilateral Cutaneous Tuberculin Reactions. I. Civalleri and G. Ceroni.—p. 776.

Histologic Manifestations in Experimental Pneumothorax.—Pescatori, continuing a series of experimental researches on the pathogenesis of eosinophilia, which have enabled him to discover a close relation between local and general asphyctic processes and eosinophilia of the tissues and the blood, endeavored to find out also whether eosinophilia occurring after pneumothorax is to be ascribed to an asphyctic state, contrary to the affirmations of many authors who regard eosinophilia as the morphologic expression of immunization reactions. The experiments carried out with normal albino rats, which are known to have a constant leukocyte count, have shown that postpneumothorax eosinophilia occurs constantly and is found repeatedly at regular intervals in various experimental animals. There is a record also of the finding of eosinophils in the parenchyma of the collapsed lungs, in which is found, in addition to an extensive collection of blood pigment, an intense proliferation of the histocytic elements of the bronchial wall and of the peribronchial connective tissue. These manifestations, similar to those observed by the author in the microscopic examination of the lungs of persons who have died from bronchial asthma, and to those secured from the microscopic examination of the lungs of rabbits in which a bronchial spasm had been produced experimentally by a foreign body, have enabled the author, on the basis also of other considerations of a histopathologic nature, to formulate the hypothesis that during the compression of the lung, in the course of pneumothorax, the bronchial tree is reduced in volume by a contraction of its smooth musculature, which follows or precedes the contraction of the pulmonary elastic network. To this spastic state and to the asphyxia that follows in the patient are to be ascribed, respectively, the histo-eosinophilia and the eosinophilia of the circulating blood of persons subjected to pneumothorax.

Archiv für Schiffs- und Tropen-Hygiene, etc., Leipzig

34: 527-576 (Oct.) 1930

*Bilharziasis of Spinal Cord. H. R. Müller and A. Stender.—p. 527.
*Malaria: Functional Disturbances of Kidney. M. Wolsky and E. M. Schewelewa.—p. 542.
Atypical Lymph Node Sporocytosis: Case. W. Haberfeld.—p. 549.
Vitality of Bacillus Pestis. I. S. Tinker and G. P. Rudnew.—p. 554.
*Determination of Sugar Content of Blood. H. Heinemann.—p. 559.
Plague: Anatomicopathologic Changes. B. A. Photakis.—p. 562.
Schistosomiasis Mansoni in French Guiana and Liberia. E. Maass and H. Vogel.—p. 564.

Bilharziasis of Spinal Cord.—Müller and Stender report a case of bilharziasis of the spinal cord in which the clinical picture simulated that of complete transverse thoracolumbar myelitis. Examination of the nervous system revealed that the cranial nerves were intact. Oculopupillary disturbances were absent and the fundus of the eye did not show pathologic changes. The upper extremities were normal. In the lower extremities the feet and legs were paralyzed and the thighs were paretic, with definite atrophy of all the muscles. The thoracic and even the abdominal muscles were not paretic but the muscles of the back were weak. The gluteal muscles, the ileopsoas, the adductor muscles and the left quadriceps were paretic but could still be moved actively. In the feet only the great toes could be moved and they could be flexed and extended less than a centimeter. The paralyzed leg muscles were markedly hypotonic but the tonus of the rest of the muscles was normal. The motor disturbances were accompanied by severe sensory disturbances. There was found a hypesthesia extending downward from the fourth and fifth thoracic segments, a definite hyperesthetic zone in the region of the twelfth thoracic segment with complete anesthesia for touch extending downward from this zone. Extending downward from the eighth thoracic segment there was hypesthesia for heat and from the twelfth thoracic segment downward there was anesthesia. Extending downward from the seventh thoracic segment to the second lumbar segment on the right side and the twelfth thoracic segment on the left side there was hyperesthesia to cold and below these segments there was anesthesia to cold. Hypesthesia and paresthesia for pain stimuli extended from the seventh and eighth thoracic segments to the twelfth thoracic segment; below this there was analgesia. Disturbances of the postural sense were present in the toes and ankles. The reflexes in the upper extremities were normal. Of the abdominal wall reflexes only the two uppermost ones could be elicited and they were weak; the rest, together with the cremaster reflex, were absent. The left patellar tendon reflex was present but it was extremely weak; the right patellar tendon reflex and both achilles tendon reflexes were absent. The Babinski reflex was positive on the right side and negative on the left side. Rossolimo's reflex was positive on both sides but was more pronounced on the right than on the left. On the basis of the clinical symptoms and an examination of the cerebrospinal fluid there was made a diagnosis of transverse myelitis of unknown cause at the level of the second and third thoracic vertebrae. A paralysis of the urinary bladder was followed by an ascending septic cystopyelitis and the patient died under symptoms of cardiac collapse. Macroscopic examination of the spinal cord post mortem revealed that, whereas the cervical portion was normal with regard to both its volume and its appearance and color on cross-section, the rest of the cord presented marked pathologic changes. The lower portion of the thoracic segment of the cord and the lumbar segment were greatly thickened. In all portions of the thoracic segment and particularly noticeable in the lumbar segment there were extensive grayish red areas of softening, which were not sharply demarcated from the healthy tissues. In some parts of the lumbar segment the cord was so completely destroyed that the butterfly figure of the gray substance was scarcely recognizable and great difficulty was experienced in removing tissue for microscopic examination. On the basis of the macroscopic examination a differentiation could not be made between an intramedullary tumor, multiple sclerosis, or an atypical vascular process leading to softening of the cord. A hurriedly made frozen section stained with sudan revealed peculiar oval structures that appeared to be foreign bodies, most probably parasites. A parasitologist recognized the structures at once as eggs of *Schistosoma mansoni.*

Malaria: Functional Disturbances of Kidney.—Wolsky and Schewelewa report the observations they made in seventy-six cases of malaria on the functioning of the kidneys. Most of the patients had had malaria for several years. The examinations were made only on patients whose clinical history did not reveal pathologic conditions of the heart, blood vessels or kidneys. Before each examination a careful urinalysis was made in order to exclude all patients who had pathologic substances in the urine. Of the seventy-six patients examined it was found that fifty showed various abnormalities in the functional activity of the kidneys. According to the condition of the renal activity, all the cases were divided into four groups. The first group consisted of twenty-six patients in whom Volhard's water test and concentration test revealed a marked disturbance in the concentration and excretory powers of the kidneys. The second group consisted of fifteen malaria patients in whom the concentration power was normal but the excretory power was decreased. In the third group were nine patients in whom there was a disturbance in the concentration power of the kidney. In the fourth group were twenty-six patients in whom the concentration and dilution powers of the kidneys were normal. Because of the frequency of disturbances in the functioning of the kidneys in malaria it is recommended that in the prescribing of a diet for malarial patients one should exclude all kinds of food that irritate the kidneys or increase their work.

Determination of Sugar Content of Blood: Kaufmann's Method.—Heinemann states that, because of the sta-

bility of the reagents used in performing Kaufmann's method of determination of the sugar content of the blood it is particularly suitable for use in the tropics. The method is based on the reduction of yellow picric acid in alkaline solution to reddish brown picramic acid. The amount of sugar present is determined colorimetrically.

Deutsche medizinische Wochenschrift, Berlin

56: 1769-1812 (Oct. 17) 1930

*Vaccination Against Tuberculosis. Uhlenhuth.—p. 1769.
*Tuberculosis Vaccination According to Calmette. Berghaus.—p. 1771.
Significance of Technic of Compression of Ureter in Elimination Pyelography. J. Ziegler.—p. 1772.
*New Method for Treatment of Morphinism. M. Sakel.—p. 1777.
Significance of Constitutional Factors for Suggestive Phenomena. A. Herzberg.—p. 1778. C'cn.
Checking Inflammatory Processes with Amidopyrine. M. Winternitz-Korányi.—p. 1779.
Experiences with Solution of Secondary Butylbrompropenylbarbituric Acid. E. Puppel.—p. 1781.
Combined Thorium X and Light Therapy in Psoriasis. F. Landt. —p. 1782.

Vaccination Against Tuberculosis.—Uhlenhuth reviews his vaccination experiments on calves which he reported in the *Deutsche medizinische Wochenschrift* (**55:**1535 [Sept. 13] 1929; abstr. THE JOURNAL, Nov. 23, 1929, p. 1690) and experiments of several other investigators. On the basis of these observations and also considering the results on human beings reported by French investigators, the author reaches the following conclusion: With due acknowledgment to Calmette's work, he nevertheless thinks that as yet an expectant attitude toward tuberculosis vaccination is the more reasonable. He emphasizes that the isolation of the exposed children and other hygienic measures that in the past have proved helpful in the combat on tuberculosis should not be disregarded in consideration of protective tuberculosis vaccination, the value of which has not been definitely demonstrated.

Tuberculosis Vaccination According to Calmette.—Berghaus directs attention to Calmette's statement that in the cities and districts of France in which nearly all the new-born are vaccinated against tuberculosis the general mortality has decreased from 40 to 50 per cent, and that the same observation has been made in Rumania, Greece, Belgium, Uruguay and other countries. In order to determine whether this improvement was caused by the tuberculosis vaccination the author investigated the tuberculosis mortality of infants and children in Baden during the years from 1877 to 1929. A tabular report indicates that since 1924, the year in which Calmette began his method of vaccination, the tuberculosis mortality in Baden decreased from 8 to 3.5 for each 10,000 children in 1929, or about 55 per cent. This decrease, which is about the same as that observed by Calmette, was effected without tuberculosis vaccination. Of every 100 children who died in 1929, only 1.9 died of tuberculosis. This shows that the vaccination against tuberculosis is really not as important as some pediatricians seem to think, since 98.1 per cent of deaths among children are due to other causes. Much more important than among children is the combat on tuberculosis mortality among young people between 15 and 30 years of age. Thirty-five per cent of those who die between these ages die of tuberculosis, and among these persons vaccination against tuberculosis is ineffective. Only by increasing the natural powers of resistance and by avoiding overwork and other factors detrimental to the health can the tuberculosis mortality of young people be reduced. The author is convinced that the decreased tuberculosis mortality among children is likewise mainly due to a better care than is now given to infants.

New Method for Treatment of Morphinism.—In order to overcome the abstinence symptoms that develop following the sudden withdrawal of morphine, Sakel administered to his patients during the first six or eight days daily large amounts of insulin (up to 80 units). He employed this method successfully in fifteen cases. He withdraws the morphine suddenly and administers insulin when the first abstinence symptoms become manifest. In all instances all somatic abstinence signs such as vomiting, diarrhea and sitophobia could be counteracted. The motor restlessness as well as the increased irritability was likewise favorably influenced. These effects were due to the insulin and not merely to the injection, because injections of other substances did not have the same effect. Formerly the author had combined the insulin injections with the administration of dextrose and of small amounts of barbituric acid. However, later he discontinued it, because he found that when the insulin was given alone it was more effective. Other advantages of the insulin treatment were that the patients gained in weight and that sleep could be induced more readily. But although the abstinence symptoms can be overcome by insulin the final cure of morphinism has to be effected mainly by psychotherapy.

Klinische Wochenschrift, Berlin

9: 1849-1896 (Oct. 4) 1930

Stasis in Pulmonary Circulation. R. Schoen.—p. 1849.
Active Hormonal Content of Preparations of Anterior Lobe of Hypophysis. S. Janssen.—p. 1853.
*Artificial Ovulation During Pregnancy by Means of Hormonal Extract from Anterior Lobe of Hypophysis. A. Loeser.—p. 1855.
Fever Therapy in Dermatologic and Venereal Disorders. G. Stümpke. —p. 1857.
*Decrease of Chlorides in Urine During Acute Lobar Pneumonia. F. Reiche.—p. 1860.
Changes in Pulmonary Artery in Cases of Acute Rheumatic Endocarditis or in Cardiac Disorders of Rheumatic Origin. H. Chiari. —p. 1862.
Clinical Experiences in Treatment of Postencephalitic Manifestations with Harmine. H. Frank and O. Schlesinger.—p. 1684.
Capillaroscopy in Infants and Small Children. G. Tugendreich and C. Boenheim.—p. 1866.
*Meinicke Turbidity Reaction in Diagnosis of Syphilis. E. Meinicke.—p. 1867.
Active Immunization with Diphtheria Toxoid in Hungary. B. Johan and J. Tomcsik.—p. 1868.

Artificial Ovulation During Pregnancy by Means of Hormonal Extract from Anterior Lobe of Hypophysis.—Loeser stresses that the changes resulting from pregnancy involve not only the genitalia but the entire incretory system. Changes have been noted in the thyroid, the hypophysis and the ovaries. Although ovulation is normally suspended during pregnancy, Zondek succeeded in initiating it in pregnant mice by means of the administration of a hypophyseal extract. The author describes tests on pregnant rabbits. The hormonal extract was administered either intramuscularly or subcutaneously. One ovary was removed shortly before the injection. The rabbits were killed seventy hours after the injection. The microscopic examination of the ovaries exposed to the action of the hypophyseal preparation revealed considerable changes. The ovaries that had been extirpated before the injection of the hormonal extract showed the corpora lutea graviditatis but no hemorrhages resulting from freshly ruptured follicles. However, the ovaries that had been exposed to the action of the hormonal preparation showed, besides the corpora lutea graviditatis, also large follicles at the point of rupture and extensive hemorrhages. The follicles were filled with blood, and from the wall of the follicle luteinization had set in. That these changes were not pathologic but that there was a regular ovulation with expulsion of the egg was proved by serial sections through the tube.

Decrease of Chlorides in Urine During Acute Lobar Pneumonia.—Reiche investigated the decreased chloride content of the urine of patients with lobar pneumonia. He made tests on fifteen patients. The chloride content of the blood as well as of the urine was determined daily. The author thinks that the chloride deficiency of the urine is caused mainly by the fever and by a decreased salt supply in the diet. It is probable that during pneumonia the cell permeability is reduced so that a smaller amount of chlorides is brought into the blood. In the renal function there are no notable changes. These observations indicate that the kidneys excrete a smaller amount of chlorides because the blood contains a decreased quantity.

Meinicke Turbidity Reaction in Diagnosis of Syphilis.—In discussing his turbidity reaction for the diagnosis of syphilis, Meinicke directs attention to the fact that instead of using extracts from hearts of horses, as he did formerly, he now uses extracts from beef hearts. The observations of several investigators as well as his own tests convinced him that the use of equine extracts reduces the specificity of the turbidity reaction and that beef extracts are superior. The use of equine extracts is not advisable for two reasons: first, on account of heterogenic antibodies; second, because many patients have received injections of serum from horses.

Medizinische Klinik, Berlin

26: 1469-1506 (Oct. 3) 1930

Present Status of Internal Secretion. E. Vogt.—p. 1469.
Foundations of Clinical Estimation of Renal Function. F. Mainzer. —p. 1473.
Certain Locations of Cerebral Tumors Causing Choked Disk on Opposite Side. G. Herrmann.—p. 1475.
*Misleading Symptoms in Patients with Cancer. W. Berger.—p. 1476.
Treatment of Facial Hemiatrophy by Means of Transplantation of Fat Tissues. L. Moszkowicz.—p. 1478.
Dislocations in Iliosacral Joints: Unilateral Pelvic Luxations. G. Neugebauer and W. Frommhold.—p. 1478.
*Tubercle Bacillus Carriers. H. Blume.—p. 1479.
Bennhold's Congo Red Test in Differential Diagnosis Between Renal Amyloidosis and Nephrosis. K. Narbeshuber.—p. 1481.
Brucella Abortus Infection in Man. Nagorsen.—p. 1482.
Cardiac Hormone and Its Actions. E. Rubensohn.—p. 1483.

Misleading Symptoms in Patients with Cancer.—Berger describes cases of cancer without marked local symptoms of the primary tumor and without characteristic signs of metastases. In these cases the more atypical general symptoms predominate, and they often lead to an incorrect diagnosis. The author describes three types of clinical pictures that frequently mask the cancer symptoms. 1. The pseudocardiac forms, which are those cancers in which the symptomatology resembles that of the cardiac insufficiency of older patients. To illustrate this type the author reports the case of a man, aged 60, who gave the impression of arteriosclerosis with cardiac insufficiency. 2. As the second type of symptoms that may mask cancer the author describes the pseudoseptic forms and the febrile forms. They have the symptomatology of a sepsis with chronic fever and are accompanied by a more or less severe anemia, but local symptoms are usually absent. The clinical histories of two cases of this type are reported and the author concludes that the generally accepted diagnostic rule that fever speaks against tumor is no longer tenable. Fever is often noted in bone metastases, in hypernephroma and in bronchial cancers. 3. The third type described by the author comprises the pseudorheumatic and the pseudoneuralgic forms. In many cases of cancer, rheumatoid pains occur. The pains may be localized in the joints, bones, nerve trunks or muscles. Usually but not always these symptoms are noted in bone metastases. The author describes three cases and says that in all older patients with rheumatoid and neuralgic pains, whenever the etiology is not entirely clear, the clinical examination should include a search for a primary tumor and roentgenoscopy should be resorted to in order to discover possible bone metastases.

Tubercle Bacillus Carriers.—Blume points out that the question whether there are individuals who, without having tuberculosis, harbor tubercle bacilli in their respiratory tract and in their sputum is of greatest importance for social hygiene. Some authorities answer this question in the affirmative, while others answer it in the negative. The author thinks that a person may be considered a tubercle bacillus carrier only when the bacilli are actually found in the sputum and when tuberculous changes in the lungs cannot be found during clinical examination, during roentgenoscopy and during necropsy. Negative clinical and roentgen examinations alone are not sufficient evidence. How careful and reserved one should be with the diagnosis of tubercle bacillus carrier is illustrated in a case described by the author. The clinical and roentgen examinations gave always negative results, but on account of the presence of tubercle bacilli in the sputum the case was carefully observed during a long period. Only after three years did a pulmonary focus become manifest, and this proved that the patient was not a carrier. The author thinks that in this case there existed a mild chronic tuberculosis which after three years became progressive. He considers the existence of tubercle bacillus carriers as still unproved.

26: 1507-1544 (Oct. 10) 1930

Hypothyreosis in Surgical Practice. G. Büttner.—p. 1507.
Significance of Infraclavicular Infiltrate and of Early Exudative Pleurisy for Phthisiogenesis. F. Loben.—p. 1511.
*Treatment of Bone Fractures with Especial Consideration of Operative Treatment. Weiss.—p. 1515.
*Is Change in Blood Group Possible During Therapeutic Application of Arsphenamine or of Arsenic Preparations? H. Munter and D. Nitschke.—p. 1516.
Practical Value of Functional Test of Circulation by Means of Amplitude Frequency Product. F. Kirch.—p. 1518.
Danger of Gangrene from Ergotism During Application of Ergotamine Tartrate in Surgical Treatment of Exophthalmic Goiter. W. Speck. —p. 1521.
Anaphylactic Manifestations Following Injection of Insulin. G. Stroomann.—p. 1523.
Massage of Prostate not Advisable. K. Lutz.—p. 1523.
Experiments on Localized Protein Decomposition in Central Nervous System. A. Slauck.—p. 1524.
Method for Demonstration of Substantia Granulofilamentosa in Erythrocytes. F. Fischer.—p. 1525.

Treatment of Bone Fractures with Especial Consideration of Operative Treatment.—Weiss first gives a tabular report on the industrial accident and traffic accident cases that were treated in the All Saints Hospital during the years 1924 to 1928, inclusive. He discusses the principles of treatment of fractures of various bones. For skull fractures of the convexity he recommends immediate operative treatment. In fractures of the base of the skull, conservative treatment is better. Trepanation is rarely necessary. The author resorts to trepanation only in case of great intracranial pressure resulting from intracranial hemorrhage. In the comparatively rare fractures of the spinal column, surgical treatment is seldom resorted to. If the paralysis indicates a complete transverse lesion, the surgical treatment is just as hopeless as any other treatment and therefore can be omitted. However, operative treatment should be resorted to whenever the paralysis is incomplete and when there is hope that there is a compression of the spinal cord rather than a complete crushing. The author further discusses the treatment of fractures of the ribs, of pelvic fractures, and of fractures of the scapula. These fractures generally require proper bandaging and rest. In fractures of the clavicles the treatment is difficult because of the dislocation that results from the traction exerted by the sternocleidomastoid muscle. However, proper bandaging will adapt the fragments properly, and an operation with fixation by means of wire, as it is practiced in Eiselsberg's clinic, is rarely necessary. The author further discusses the treatment in fractures of the bones of the extremities. Fractures of the humerus necessitate surgical treatment only when they are near the shoulder joint; that is, when they involve the head or the neck of the humerus. Fractures of the shaft of the humerus rarely require operative treatment. In fractures at the distal end of the humerus the adjustment of the fragments can likewise generally be done without resorting to surgery. In olecranon fractures, surgical treatment was not found necessary. The author further discusses splints and casts in the treatment of fractures of the lower arm, of the carpal bones, of the metacarpal bones, and of the phalanges. In fractures of the neck of the femur, operative treatment is usually necessary. Patellar fractures always receive surgical treatment. Fractures of the head of the tibia occasionally are treated surgically. Fractures of the leg below the knee are the most frequent. Under roentgen control and in spinal anesthesia, the fracture is reduced and then a cast is made. Sometimes wire extension is resorted to and surgical reposition is also occasionally employed. Fractures of the malleolus and of the calcaneus are treated with plaster-of-paris casts. In the fractures of the metatarsal bones and in fractures of the toes, extension is employed. In the conclusion the author stresses that, although in this paper he gave especial consideration to operative treatment of fractures, one should not gain the impression that he recommends surgical treatment for the majority of fractures. On the contrary, during the last two years he resorted to surgical treatment in only 5 per cent of the fractures.

No Change in Blood Group During Treatment with Arsphenamine or with Arsenic Preparations.—Repeated blood group tests conducted by Munter and Nitschke on 100 patients who underwent intensive arsphenamine or arsenic treatments gave no indications for changes in the blood group. The authors think that contradictory statements in the literature are probably due to an incorrect technic. Tests on two persons are described in whom the reactions showed deviations. However, repeated tests revealed a constant blood group. If the serum alone had been examined, the results could have been taken as an indication for the changeability of the blood group, because the first test of the serum revealed blood group IV, whereas later tests revealed blood group II. However, the blood corpuscles, which were also tested, gave always the

same reaction. Therefore the authors think it advisable that in blood group tests both serum and corpuscles should be examined.

Münchener medizinische Wochenschrift, Munich

77: 1747-1788 (Oct. 10) 1930

*Diagnostic Significance of Bone Conduction in Heart Diseases. G. Ganter.—p. 1747.
*Scarlet Fever Immunity of Black Race. O. Fischer.—p. 1749.
Acute Forms of Arthritis During or After Influenza. J. Munro.—p. 1750.
Meaning of Homeopathic Rule. A. Bier.—p. 1751.
Roentgen Treatment in Tonsillar Hypertrophy. L. Klotz.—p. 1756.
Asphyxia in Two Cases of Intestinal Anesthesia by Means of Tribromethanol. Hoepfl.—p. 1756.
Necrosis of Testes Following Sport Injury. C. Fervers.—p. 1757.

Diagnostic Significance of Bone Conduction in Heart Diseases.—Ganter directs attention to the diagnostic significance of the bone conduction of the acoustically perceptible manifestations of the diseased heart. Vibrations (sounds and murmurs) that develop in the right side of the heart are imparted to the adherent part of the sternum, and from here they are transmitted to the ribs, the clavicles, and sometimes even the olecranon. Vibrations of the left heart do not show this symptom. Vibrations of the wall of the aorta show the bone conduction only when the ascending aorta is dilated and touches the sternum. The dilatation of the aorta is caused in most cases by increased blood pressure. The transmission of the second aortic sound, which in these cases is usually accentuated, is an auscultatory sign of hypertension. Great inspiratory enlargement of the thorax may obliterate the symptom, particularly in such cases in which the hypertension is of a minor degree. In cases in which the blood pressure is considerably increased, the symptom is constant. In patients without hypertension, bone conduction of the second aortic sound indicates an inflammatory dilatation of the ascending aorta.

Scarlet Fever Immunity of Black Race in Africa.—Fischer points out that in tropical regions scarlet fever is either entirely absent or extremely rare; this is especially the case in tropical Africa. Occasionally cases develop among Europeans. However, such sporadic cases are never followed by an epidemic among the natives. Some authors have assumed a scarlet fever immunity of the black race. In order to determine whether this is really the case, the author made Dick tests on natives of the Tanganyika region. He tested 752 persons belonging to five different tribes. He describes the technic and gives tabular reports of the results of his tests. He found a small percentage of positive reactions. But while among Europeans there were more than 60 per cent positive reactions, among the African natives examined by the author the positive reactions were only 1.8 per cent. It is also pointed out that the Dick test is not an absolutely reliable indicator of scarlet fever immunity, since scarlet fever has been observed in persons with negative Dick reactions. The author comes to the conclusion that, although scarlet fever is extremely rare among the natives of Africa, an absolute immunity does not exist.

Wiener klinische Wochenschrift, Vienna

43: 1245-1272 (Oct. 9) 1930

*Genital Tuberculosis in Women: Its Treatment. F. Kermauner.—p. 1245.
Theoretical Foundations of Academic Instruction in Tuberculosis. A. Greil.—p. 1249.
*Oleothorax. H. Maendl.—p. 1252.
Observations During Heating of Cerebrospinal Fluid with Special Consideration of Changes in Permeability. M. Dancz and A. Stief.—p. 1254.
Rôle of Liver in Metabolism of Choline. D. Danielopolu, G. G. Proca and R. Brauner.—p. 1258.
Results of Laryngostroboscopic Examinations. H. Stern.—p. 1259.
Cosmetic Correction of Deviations of Tip of Nose. E. Eitner.—p. 1260.
Tuberculin Therapy. A. V. Frisch.—p. 1261.

Treatment of Genital Tuberculosis in Women.—Kermauner first discusses the incidence and the diagnostic difficulties in genital tuberculosis. According to anatomists, tuberculosis represents from 1 to 2 per cent of all genital disorders. For the clinician, however, the diagnosis is often difficult. Besides those cases in which tuberculosis is thought of there are also cases in which there are no other complaints, as that of sterility. In other instances myoma and cancer are thought of, and only the operation or even the necropsy reveals the tuberculosis. During a period of eight years the author observed ninety-two cases of genital tuberculosis. He discusses the diagnosis of these cases. In a considerable number of cases, ascites was noted. In many instances the tuberculin test was made, but it did not always prove reliable. In some cases, laparotomy insured the correct diagnosis. The author further discusses the treatment of genital tuberculosis. In the surgical therapy, Hegar's method is still one of the most important. Some authorities advise against operative treatment. The author, considers it necessary in some cases, particularly for diagnostic purposes; however, radical operation is, at least in younger patients, not advisable. In recent years the general treatment has been emphasized as the most valuable, especially dietary treatment, rest cures and fresh air and sunshine. Quartz lamp irradiation has been found helpful in ascites in young persons. In discussing roentgen treatment for genital tuberculosis, the author stresses that only small doses should be applied, in most cases about 10 per cent of a unit skin dose.

Oleothorax.—After discussing the indications for oleothorax and following a description of the method, Maendl gives the detailed report of one case. The patient had an open cavernous tuberculosis of the left upper lobe. The cavern was large and had rigid walls. When pneumothorax did not bring the desired result, oleothorax was resorted to. After fourteen injections of oil the fever had entirely disappeared. In all, 1,855 cc. of oil was injected. After the fifteenth filling the oleothorax was complete. Coughing, sputum and fever completely disappeared. The sedimentation speed was again normal and the patient's weight increased from less than 50 Kg. to almost 54 Kg. The author's experiences with oleothorax are still limited. So far he has employed it in only five cases. In one case he employed pneumothorax on the right side and oleothorax on the left. In another patient a phrenicotomy on the left side was combined with oleothorax on the right side. In both instances the results were favorable, but it is pointed out that in such cases of bilateral collapse therapy great precaution is necessary. Otherwise oleothorax involves no great dangers. If asepsis is maintained during the treatment there is only one danger; namely, that excessive pressure might cause perforation so that the oil would enter the lung. Therefore the pressure in the thorax should be carefully controlled.

Zeitschrift für Kreislaufforschung, Dresden

22: 625-656 (Oct. 1) 1930

Electrocardiogram: Respiratory Changes. L. Condorelli.—p. 625.
Amount of Blood Ejected from One Chamber of Heart. B. Kisch.—p. 634.
*Cardiac Insufficiency: Chemical Changes in Blood. E. Becher.—p. 638.
*Oxygen and Carbon Dioxide Inhalations. C. Kroetz.—p. 641.

Cardiac Insufficiency: Chemical Changes in Blood.—Becher states that the aminonitrogen content of the blood in cardiac insufficiency is almost constant and varies only slightly from the normal. Occasionally, particularly in the cardiac insufficiency of essential hypertension, the creatinine content of the blood is increased. Although the urine is deeply colored in cardiac insufficiency, the blood serum does not contain an increased amount of urochrome or urochromogen. In the blood the uric acid, urea and rest nitrogen are frequently increased but not so much as they are in renal insufficiency. Characteristic for the blood changes in cardiac insufficiency is the fact that accompanying the increase in the uric acid, urea and rest nitrogen there is not an increase in the aromatic substances. Unlike the amount of urea in the blood the amounts of phenol, cresol and its derivatives and indican are not increased; this fact represents the characteristic changes in the blood in cardiac insufficiency.

Oxygen and Carbon Dioxide Inhalations and Their Effect on Circulation.—Kroetz studied the effects of oxygen and carbon dioxide inhalations on the circulation in healthy persons and in persons with circulatory disturbances. He states that in man, unlike the lower animals, oxygen inhalations do not produce an increase in the catabolic processes in the organism. There does result, however, an extremely high elimination of nitrogen. In general the amount of nitrogen eliminated nearly equals or even equals the increase in the amount of the oxygen intake. In healthy persons the oxygen content of the arterial blood remains unchanged but the amount of oxygen in the venous blood is usually greatly increased. The difference between

the oxygen content of the arterial blood and the oxygen content of venous blood is decreased. This results in a definite increase in the minute volume of the circulation. The acceleration of the heart action, however, is only slight and there is also an increase in the beat volume. Oxygen inhalations in persons with cardiac disease produce an increase in the oxygen tension of the tissue, a normalization of the oxygen content of the arterial blood and an elevation of the low minute volume and beat volume in decompensation. Carbon dioxide inhalations are indicated in shock and collapse and in chronic (usually infectious) vasomotor weakness. Excellent results have been obtained with this form of treatment, particularly in severe cases of influenza. The circulatory action manifests itself by an increase in the oxygen content of the arterial blood and in an increase in the venous reflux and with it the minute volume and the beat volume. Carbon dioxide inhalations are contraindicated in definite decompensation of the heart and in angina pectoris.

Voyenno-Meditsinskiy Jurnal, Leningrad

1: 1-124, 1930

Modern Parasitology and Its Relation to Internal Medicine. E. N. Pavlovsky.—p. 5.
*Hemostatic Methods in Wounds of Spleen. M. M. Kazakov.—p. 11.
Energy Used in One Day by Soldier in Red Army. B. D. Kravchinsky and P. T. Serebrennikov.—p. 24.
Effect of Marching with Gas Masks on Chemical Composition of Blood and Urine. M. Y. Galvyalo, A. A. Schmidt and G. E. Vladimirov. —p. 33.
*Comparative Value of Metals from Point of View of Their Practical Importance in Traumatology in Peace and in War. A. A. Vaciljev. —p. 40.
Expert Examination of Respiratory Function. V. A. Nadejdin.—p. 54.
Catarrhal Jaundice in Russian Red Communist Army. M. U. Rapoport. —p. 62.
Incidence of Helminthiasis and Measures for Its Eradication in Navy. Gnezdilov.—p. 71.
Comparative Evaluation of Methods of Functional Diagnosis in Diseases of Kidneys. D. T. Mebel.—p. 80.
Conservative Treatment of Varicose Veins of Lower Extremities. A. V. Shatzky.—p. 96.

Hemostatic Methods in Wounds of Spleen.—Kazakov studied experimentally the value of various hemostatic methods (physical, chemical and biologic) in splenic hemorrhages. Laparotomy was performed in several groups of dogs, and one or several deep wounds were made with a knife in the exposed spleens. The resulting usually profuse hemorrhage was stopped by means of thermocauterization, iron solutions, living tissues (pieces of fascia, muscles, omentum or liver, secured from the same dogs) and citrated blood plasma. At various intervals the dogs were killed, the spleens were examined macroscopically and microscopically, and the efficiency of the hemostatic agents was evaluated according to the time that was required to stop the hemorrhage, the amount of sutures used, the condition of the resulting scars and the incidence and extension of the intraperitoneal adhesions. The author is enthusiastic about the good results obtained with the citrated blood plasm, which in his opinion may be considered as a specific and indispensable hemostatic agent in splenic hemorrhages. It is kept in stock in a dark and cool place and is more or less coagulated when needed by the addition of a definite amount of a 10 per cent solution of calcium chloride. It acts so quickly and thoroughly that no sutures are required. The blood vessels of the hilus are compressed and the surfaces of the wound are kept pressed together while the modified blood plasma is injected or instilled into the wound. In four or five minutes the hemostasis is complete, the spleen is replaced in the abdominal cavity, and the abdomen is closed. Practically no abdominal adhesions were observed, and in three or four months the scars on the spleen were reduced to only a slight local thickening of the fibrous capsule with an almost perfect regeneration of the splenic tissue itself. By the other methods the hemorrhage was checked in not less than from ten to eighteen minutes and not even after twenty-five minutes, when the iron solutions or the fascia was used as hemostatic agents; in all cases the application of sutures was necessary, the scars were hypertrophic and intraperitoneal adhesions were always present. The worst results were observed after the use of fascia and of the thermocautery, the latter causing the most extensive intraperitoneal adhesions and necrosis of the splenic tissue with the resulting danger of secondary hemorrhages.

Comparative Value of Metals in Traumatology.—Vaciljev experimented on 147 dogs in order to study the effect of various metals on the living tissues. Through incisions, small fragments of chemically pure platinum, gold, silver, iron, aluminum, nickel, tin, copper, cadmium, lead and zinc (in all, eleven metals) were introduced under the skin or into the muscles of the dogs, and the wounds were closed and dressed precisely in the same aseptic manner as similar wounds on control dogs, into which metal was not introduced. At certain intervals (from fifteen hours to seven months) the included metals and the surrounding tissues were excised and examined in a series of sections under the microscope. The healing time of the wounds was noted both in the dogs under experiment and in the control dogs. The most deleterious effects were caused by the tin and especially by the copper: they retarded the healing and restoration of the tissues by causing a violent reaction of the phlegmon type in the surrounding connective tissue and extensive degenerative and necrotic changes in the muscle fibers; the process of encapsulation of the copper had not started by the end of the second month after the operation. The other metals all caused considerable irritation of the surrounding connective tissue, with an intense round cell infiltration and proliferation of the fixed cells, and also degenerative and necrotic changes of a variable intensity in the muscles. They had almost no effect on the healing time of the wounds, though the silver rather accelerated the healing process, and the nickel activated the regeneration of the bony tissues but caused an intense irritation of the surrounding connective tissue. Silver, aluminum and iron were encapsulated quickly and did not cause much reaction in the surrounding tissues; platinum, though encapsulated quickly, caused a considerable reaction in the connective tissue and a considerable degeneration of the muscle fibers; zinc, cadmium and lead after a strong initial irritation of the surrounding tissues were slowly encapsulated and could be left in the organism without any harm for an indefinite time. Gold proved to be the most harmless, causing almost no reaction in the surrounding tissues. However, this fact has not much practical value in the opinion of the author because gold can neither be used much in reconstruction surgery nor have much significance in industrial traumatology, on account of its high price and a rather limited industrial application. Thus the author came to the conclusion that the pure metals have not much practical value in surgery, and started a new series of experiments with the alloys.

Acta Dermato-Venereologica, Stockholm

11: 277-364 (Sept.) 1930

*Peptic Ulcer in Burns of Skin. G. Riehl.—p. 277.
*Experimental Sensitization of Man and Animals to Arsphenamine. B. J. Kaplun and J. M. Moreinis.—p. 295.
Hereditary Symmetrical Keratodermia: Etiology. D. Postowsky.—p. 305.
Chronic Erythema Migrans: Case. S. Hellerström.—p. 315.
Pseudoxanthoma Elasticum: Case. A. Eljasz.—p. 322.

Peptic Ulcer in Burns of Skin.—Riehl discusses the theories concerning the development of peptic ulcer in burns of the skin and reports five cases of this condition. He believes that the ulcer is caused not by the mechanical action of disintegrated blood or pieces of tissue on the gastric or duodenal mucosa but by the action of toxins circulating in the blood. The toxins either produce a hematogenous inflammatory reaction of the stomach or duodenum or act on the central nervous system or the autonomic nervous system and produce spasmodic conditions in the stomach and intestine.

Experimental Sensitization of Man and Animals to Arsphenamine.—Kaplun and Moreinis gave intradermal injections of neoarsphenamine in a series of 151 patients. The dose used was 0.1 Gm. of a solution containing 0.15 Gm. of neoarsphenamine in 100 cc. of physiologic solution of sodium chloride. In the cases that gave positive results in from seven to fifteen days after injection, a spontaneous reaction was noted, following local inflammatory manifestations in the form of infiltrates. In none of the cases in which arsphenamine had previously been given was a positive result obtained. Of eighty-four patients who had never had arsphenamine treatment before, positive results were obtained in nine. In the opinion of the authors, the appearance, in these nine cases, of local dermatoses at the points where the arsphenamine compresses had been applied, as well as, in three other cases, the appearance of a

generalized dermatosis following ordinary intravenous injections of arsphenamine, should prove the sensibility of those persons to that agent. Corresponding experiments were made on guinea-pigs. On the whole, the results confirm the observations of Frei, Nathan and Munk. It is evidently possible, in certain cases, by intradermal injection of minimal doses of neoarsphenamine to produce, both in human beings and in animals, manifestations of an increased sensibility to that agent.

Norsk Magasin for Lægevidenskapen, Oslo

91: 913-1024 (Sept.) 1930

*Postoperative Thrombosis and Embolism. J. Nicolaysen and K. Nicolaysen.—p. 913.
*Ability to Work and Pulmonary Tuberculosis, as Revealed by Sedimentation Reaction. F. M. Hollum.—p. 935.
Transposition of Viscera of Thorax and Abdomen. A. Lindaas.—p. 942.
*Gastric Secretion After Injection of Histamine. E. Skouge.—p. 945.
*Dyspepsia in Pulmonary Tuberculosis. E. Skouge.—p. 961.
*Differential Leukocyte Count in Smears. R. H. Dahl.—p. 972.
*Genuine Pneumococcic Peritonitis. C. K. Schaanning.—p. 981.
*Torsion of Kidney. E. Hjort.—p. 996.

Postoperative Thrombosis and Embolism: Prophylaxis.—The results obtained by the Nicolaysens seem to show that the number of these postoperative complications can be reduced by the administration of abundant amounts of water before and after operation. They aim to bring the amount of water on the day before operation up to 3 liters. When the patient is in bed after the operation, a low thirst enema consisting of 1 liter of water with 2 tablespoonfuls of cognac is given and followed by a drop enema consisting of 0.9 per cent sodium chloride solution with 50 Gm. of dextrose, by which most patients will during the course of the day receive up to 2 liters. The drop enema is continued the next two days and at least 1 liter is given daily. In cases of acute abdominal disorders, 1 liter of sodium chloride solution with 50 Gm. of dextrose is given subcutaneously on the operating table. The regimen includes also the administration of thyroxine and an ephedrine preparation. In the case of all patients more than 20 years of age the foot of the bed is elevated 30 cm. for a week after all operations with danger of embolism and in fractures of the lower extremities.

Pulmonary Tuberculosis and Ability to Work, as Revealed by Sedimentation Reaction.—In 60 per cent of 100 convalescents in a home for occupational treatment, Hollum found the sedimentation value on discharge the same as on admission, or lower. The results were favorable in 78 per cent. The sedimentation reaction and the ability to work are related. Normal values of from 1 to 3, also values of from 4 to 7, indicate full working capacity. Higher values indicate that care should be used in the dosage of the work treatment.

Gastric Secretion After Injection of Histamine.—Skouge's material comprised forty-one patients with various disorders. His results seem to him to show the special significance of tests with histamine in the differential diagnosis between the different degrees of achylia. More valuable bases for prognosis are also afforded by this method.

Dyspepsia in Pulmonary Tuberculosis.—Skouge studied the gastric secretion in 102 patients with pulmonary tuberculosis by means of Ewald's test meal. In the initial stage there were frequent cases of hyperacidity and cases tending toward hyperacidity, while in more advanced tuberculosis a marked tendency to subacidity and anacidity was noted. Control tests with histamine in twenty-three patients found to be anacid after Ewald's meal showed seventeen of the achylias to be false. In the remaining eight the true achylia was explained by alcoholism, syphilis and cancer. His results seem to indicate that the uncomplicated gastritis in pulmonary tuberculosis is not a deep gastritis and even after a number of years does not take on the character of a pangastritis. The absence of dyspeptic symptoms apparently does not point to continued acid production in the stomach. Dyspeptic symptoms occurred in 71 per cent of the cases in the initial stage, and in 89 per cent of those of advanced exudative tuberculosis; in advanced fibroid tuberculosis, 50 per cent of the patients had dyspepsia.

Differential Leukocyte Count in Smears.—Dahl found a relative constancy in the appearance of immature neutrophils within the same blood smear and during the course of the day. The irregular distribution of monocytes, eosinophils and neutrophil leukocytes may, he says, often lead to gross errors in the differential count. The variations, sometimes marked, in the leukocyte number during the day are inconstant in one and the same normal person. The fasting values for the total count and the relative and absolute lymphocyte counts also vary in the same normal person from time to time. Great care is advised in the clinical evaluation of the varying results.

Genuine Pneumococcic Peritonitis.—Schaanning concludes that pneumococcic peritonitis in children is not as rare as generally believed. As a rule it has a typical picture and course, which should make diagnosis possible in most cases. In adults the picture is like that of a usual perforated peritonitis and diagnosis is difficult. The prognosis is poor. His figures, which he considers somewhat high, indicate a mortality of about 47 per cent in children and about 90 per cent in adults. The treatment in children should be expectant during the first stage. When the pus is localized, drainage is instituted. In adults, operation at the earliest possible time seems to give the best results. Seven cases are reported.

Torsion of Kidney: Case.—In Hjort's patient, aged 21, with a history of pain in the right kidney and right side of the abdomen for several months, the pyelogram showed a somewhat broadened renal pelvis with calices pointing in a medial direction. Operation revealed a greatly changed kidney shaped like a spleen. The renal pelvis originated from the anterior surface of the flattened kidney and the renal vessels encircled its lateral edge, giving the impression of an inward torsion of the kidney of 270 degrees. Removal of the kidney was followed by recovery. He is uncertain whether this is a case of renal dystopia or of movable kidney.

Ugeskrift for Læger, Copenhagen

92: 907-926 (Sept. 25) 1930

*Psittacosis: Six Cases. C. H. Würtzen.—p. 907.
First Light Baths for Tuberculosis. S. Lomholt.—p. 915.

Psittacosis: Six Cases.—Würtzen's cases, in Copenhagen, occurred among the forty men of the steamship *Louisiana* from Bahia with diseased Brazilians on board. The most characteristic feature in the cases was the psittacosis pneumonia. Two additional cases were reported on arrival of the boat in Norway. One man believed to have parrot fever was put ashore in Madeira. All recovered. In the differential diagnosis examination of the blood seems to be of value; an initial relative or absolute leukopenia with lack of eosinophils is noted.

92: 927-946 (Oct. 2) 1930

*Significance of Presence of Diphtheria Bacilli in Nose and Throat in Patients with Chronic Diseases of Nose. R. Schroeder.—p. 927.
*Epidemic Myositis. N. Hansen.—p. 931.
*Some Attempts at Prophylaxis of Chickenpox. M. Nathan.—p. 934.
*How Long is Incubation Period in Epidemic Hepatitis (Catarrhal Jaundice)? E. Sylvest.—p. 936.

Diphtheria Bacilli in Nose and Throat in Patients with Chronic Diseases of Nose.—Of 126 persons with diseases of the nose, 39 (all with chronic rhinitis) were carriers of diphtheria bacilli. There were no clinical signs to justify the designation "chronic diphtheritic rhinitis," and the occurrence of diphtheria bacilli in chronic inflammations of the nasal cavities is assumed to be a secondary phenomenon. Treatment with diphtheria antitoxin in four cases had no permanent effect on the nasal condition. In only 10 per cent of the cases with diphtheria bacilli in the nasal secretions were diphtheria bacilli found also in cultures from the throat. Instead of isolation of diphtheria carriers, Schroeder advises active immunization of the population with diphtheria toxoid.

Epidemic Myositis.—Hansen estimates the incubation period at forty hours. In his opinion the seat of the disease is in the tendons and aponeuroses of the musculature. Rest in bed and treatment with salicylates are recommended.

Some Attempts at Prophylaxis of Chickenpox.—Késmárszky's method for prevention of the spread of chickenpox was found by Nathan to be ineffective.

Incubation Period in Epidemic Hepatitis (Catarrhal Jaundice).—In Sylvest's case prodromal symptoms appeared about eighteen days after infection, but not until after the twenty-sixth day did the patient become so icteric as to attract the attention of the family.